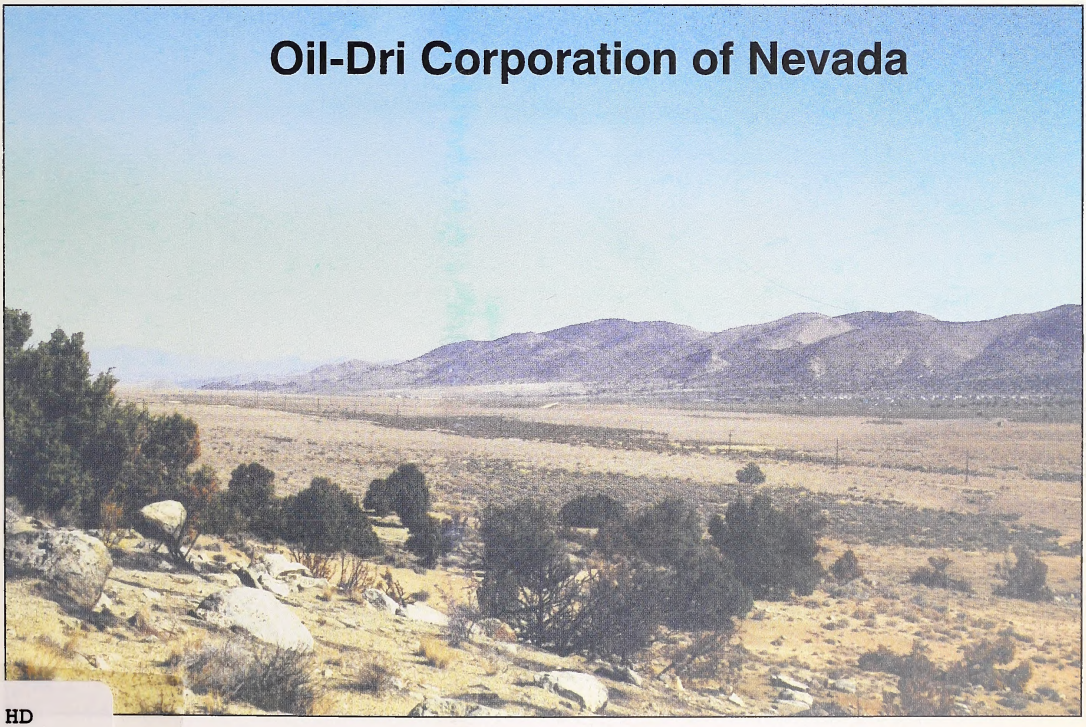
United States Department of the Interior
Bureau of Land Management

Carson City Field Office
Carson City, Nevada

May 2001

DRAFT
Environmental Impact Statement
Reno Clay Plant Project



MISSION STATEMENT

The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based upon the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation, rangelands, timber, minerals, watershed, fish and wildlife, wilderness, air and scenic, scientific and cultural values.

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Carson City Field Office
5665 Morgan Mill Rd.
Carson City, NV 89701
(775) 885-6000
www.nv.blm.gov/Carson

May 2, 2001

In Reply Refer To:
3809 (NV030)
N30-99-001P

Dear Reader:

Enclosed for your review and comment is the Draft Environmental Impact Statement (EIS) for Oil-Dri Corporation's Reno Clay Plant Project prepared by the Bureau of Land Management (BLM) Carson City Field Office. Cooperating agencies for this EIS are the Bureau of Indian Affairs, Reno-Sparks Indian Colony, and Washoe County.

The Draft EIS is based on the plan of operations submitted to the BLM under 43 Code of Federal Regulations 3809. This Draft EIS analyzes the direct, indirect, and cumulative impacts associated with the proposed development of two open pits, construction of haul and access roads, temporary stockpiling of overburden and growth medium, partial backfilling of open pits, construction and operation of an ore processing facility, haulage of product, and reclamation of disturbed areas.

The BLM is interested in your review and comment on the adequacy and accuracy of this document. Public comments will be accepted during a 60-day comment period. In addition, a public open house to accept comments and answer questions is scheduled for May 30, 2001 from 5 pm to 7 pm at the BLM Nevada State Office, 1340 Financial Boulevard, Reno, Nevada. Written comments must be postmarked by July 10, 2001, and should be sent to:

Bureau of Land Management
Carson City Field Office
Attn: Terri Knutson, EIS Project Manager
5665 Morgan Mill Road
Carson City, NV 89701

Comments may also be sent electronically to tknutson@nv.blm.gov or via fax at (775) 885-6147.

A Final EIS will be prepared that will consider the comments received during the 60-day comment period. For more information, please contact Terri Knutson at (775) 885-6156.

Sincerely,

John Singlaub
Manager,
Carson City Field Office

DRAFT
ENVIRONMENTAL IMPACT STATEMENT
OIL-DRI CORPORATION OF NEVADA
RENO CLAY PLANT PROJECT EIS

LEAD AGENCY:	**U.S. Department of the Interior** **Bureau of Land Management** **Carson City Field Office**
COOPERATING AGENCIES:	**Washoe County** **Reno-Sparks Indian Colony** **U.S. Department of the Interior - Bureau of Indian Affairs**
PROJECT LOCATION:	**Washoe County, Nevada**
COMMENTS ON THIS DRAFT EIS SHOULD BE DIRECTED TO:	**Ms. Terri Knutson** **EIS Project Manager** **Carson City Field Office** **5665 Morgan Mill Road** **Carson City, NV 89701** **(775) 885-6156**
DATE DRAFT EIS FILED WITH EPA:	**May 11, 2001**
DATE BY WHICH COMMENTS MUST BE POSTMARKED TO BLM:	**July 10, 2001**

ABSTRACT

This Draft EIS analyzes the potential impacts associated with a proposal by Oil-Dri Corporation of Nevada to construct and operate an open-pit clay mine and ore processing facility approximately 10 miles north of Reno, Nevada. The Proposed Action includes construction of two open-pits; construction of haul and access roads; temporary stockpiling of overburden and growth medium; partial backfilling of open-pits; construction and operation of an ore processing facility; haulage of product to market areas; and reclamation of disturbed areas. Alternatives to the Proposed Action are analyzed in the EIS. The Agency Preferred Alternative is Alternative A – Chickadee Drive Access Route.

Responsible Official for EIS

John Singlaub
Carson City Field Office Manager
Bureau of Land Management

DRAFT ENVIRONMENTAL IMPACT STATEMENT
RENO CLAY PLANT PROEJCT

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SUMMARY

Oil-Dri Corporation of Nevada (Oil-Dri) proposes to develop and mine locatable clay material in Hungry Valley, Washoe County, Nevada. The proposed mine, known as the Reno Clay Plant Project (Project), would result in development of two open pit mine areas, construction of a Processing Facility, haul and access roads, and continued exploration activities. Development of the Project is described in a Plan of Operations (Plan) submitted in July 1999 to the Carson City Field Office of the Bureau of Land Management (BLM).

The Project is located on public and private land in Washoe County, Nevada approximately 10 miles north of the Reno/Sparks area. BLM reviewed the Plan submitted by Oil-Dri and determined that the proposed mine development (Proposed Action) has the potential to result in significant environmental impacts and preparation of an environmental impact statement (EIS) would be required.

This EIS describes Oil-Dri's Proposed Action, reasonable alternatives to the Proposed Action, and environmental consequences that could result from implementation of these actions. Potential direct, indirect, and cumulative effects on the environment have been analyzed for the Proposed Action. Alternatives, to reduce or eliminate impacts associated with the Proposed Action, were developed and analyzed for potential direct and indirect effects. Impacts described in this EIS will form the basis for the agencies' decision regarding the Proposed Action, alternatives, and selection of appropriate mitigation measures. No distinction is made in this EIS between potential impacts on public versus private land that would result from possible authorizations by BLM.

SUMMARY OF PROPOSED ACTION

Implementation of Oil-Dri's Proposed Action would result in construction of two new open pit mine areas (North Mine Area and South Mine Area), construction of a new Processing Facility on private land, construction and upgrade of the Main Haul Road linking mine areas with the Processing Facility, upgrading and widening existing roads, and continued surface disturbance associated with exploration activities. All areas disturbed by the Project would be reclaimed in accordance with the reclamation plan submitted by Oil-Dri and approved by BLM and NDEP.

Total land disturbance associated with the Proposed Action is approximately 345 acres. This acreage includes approximately 305 acres of BLM-administered public land and 40 acres of private land owned by Oil-Dri.

Mining operations in the Project area are expected to occur during a 20-year period. Reclamation activities may extend beyond the projected 20-year mine life. Exploration during the 20-year mine life may result in identification of additional clay reserves that would extend the mine life beyond the 20-year period. Mining of additional clay reserves beyond the 20-year period would require a revision to the Plan and additional National Environmental Policy Act (NEPA) analysis.

Mining activities in the North and South Mine areas would result in recovery of clay material that would be hauled to Oil-Dri's Processing Facility located south of the South Mine Area. Clay material would be mined using conventional truck and shovel methods. A series of mine panels would be developed in each mine area. As sequential panels are developed, overburden and off-specification clay material generated from the Processing Facility would be used to backfill mined-out panels in the North and South Mine areas. Approximately 60,000 tons of off-specification material from the Processing Facility would be used annually as backfill in the South Mine Area and up to 7,000 tons (or about 10%) in the North Mine Area. Mining and development of the North Mine Area would be the same as the South Mine Area. Average depth of the cuts would vary from 20 to 70 feet depending on thickness and quality of the clay material. No more than 40 feet of clay material would be removed from any one mine panel. Overburden in the area ranges from zero to 28 feet in thickness.

Under the Proposed Action, the primary access for the Project would be via Eagle Canyon Drive. All truck traffic and a majority of employee traffic

would use this route. A secondary access, Chickadee Drive, would be used for some employee traffic.

The Proposed Action would require up to 13.5 acre-feet of water per year to control fugitive dust in the active mine area, on access roads in the Project area, and for processing activities. Oil-Dri currently owns sufficient water rights in Lemmon Valley to meet these needs. Oil-Dri has applied to the Nevada State Engineer to amend these water rights for use in the Project, which includes a change in the point of diversion and changes in the manner of use.

Reclamation of land disturbance in the mine pit areas would take place concurrently with operations where possible. The top one-foot of soil (growth media) would be stripped and stockpiled prior to mining for use in reclamation activities. As mine panels are backfilled, growth media from stockpiles or from concurrent soil stripping operations would be placed on prepared panels.

Grading of disturbed areas to create a stable post-mining topography would occur prior to replacing the growth media. The reclaimed surface would be below existing ground level and eventually form shallow, undulating depressions ranging in depth from approximately 15 to 40 feet in the North Mine Area and 10 to 20 feet in the South Mine Area.

Sites would be seeded in the appropriate season following preparation. Oil-Dri would construct fences to eliminate livestock grazing on reclaimed areas until vegetation is well established.

ISSUES SUMMARY

Issues identified during public scoping and agency review of Oil-Dri's proposed mine Project include the following:

- Potential for air quality problems due to dust emissions related to mining, hauling, and processing of the clay material;
- Water quantity impacts from well pumping;
- Traffic safety and social concerns related to commercial transport of product from the Processing Facility;
- Visual Resources;
- Light pollution;
- Noise related to mining and processing; and
- Reclamation.

PROJECT ALTERNATIVES

Issues raised during public scoping and agency review of the Proposed Action were used to identify potential significant impacts that could result from the proposed Project. In general, potentially significant effects that were identified include impacts related to increased heavy truck traffic through residential and school zones along Eagle Canyon Drive.

Three alternatives to the Proposed Action are evaluated in this DEIS: Alternative A – Chickadee Drive Access Route; Alternative B – South Access Route; and the No Action Alternative. These alternatives represent a reasonable range of alternatives to the Proposed Action.

SUMMARY OF IMPACTS

Analysis of potential impacts and mitigation associated with Oil-Dri's proposed mine Project is presented in Chapter 4 – *Consequences of the Proposed Action and Alternatives*. The following is a summary of potential impacts, by resource, resulting from the Proposed Action and alternatives.

PROPOSED ACTION

GEOLOGY, MINERALS, AND PALEONTOLOGY

Implementation of the Proposed Action would result in disturbance of approximately 305 acres of public land and 40 acres of private land. Up to 6.9 million tons of clay material would be removed for processing over the life of the mine. The remainder of overburden and off-specification clay material would be placed as backfill in mined-out panels. Reclamation of mine panels and partial reclamation of the Processing Facility site would reduce impacts associated with mine development.

AIR RESOURCES

Mining and material processing operations for the Proposed Action would meet all state, county, and federal air pollution regulations. Fugitive dust from mining and processing operations would be controlled by use of water, tackifier, and bag house technology.

AESTHETICS

Visual Resources

Impacts resulting from implementation of the Proposed Action on visual resources would be modification of landforms resulting in shallow, undulating depressions approximately 15 to 40 feet in depth in the North Mine Area and 10 to 20 feet in depth in the South Mine Area. Reclamation activities, however, would reduce long-term visual impacts.

Noise

The project would result in an increase in noise due to mining and material processing activities in Hungry Valley. Noise generated by the Proposed Action is predicted to be less (49 dBA) than the maximum (65 dBA) allowed by Washoe County Code. All trucks associated with the Project would be operated and maintained in compliance with applicable local, state, and federal noise requirements for commercial vehicles.

WATER RESOURCES

The Proposed Action would require up to 13.5 acre-feet of water per year to control fugitive dust in active mine areas, on access and haul roads in the Project area, and for processing activities. Oil-Dri currently owns sufficient water rights in Lemmon Valley to meet these needs. Oil-Dri has applied to the Nevada State Engineer to amend these water rights for use in the Project, which includes a change in the point of diversion and changes in the manner of use. Public water supply for the Reno-Sparks Indian Colony is located in a separate hydrographic basin and would not be affected by the Proposed Action.

SOIL

Potential impacts to soil resources resulting from implementation of the Proposed Action would include loss of a portion of the soil during salvage and replacement, sediment loss due to erosion, and reduced soil productivity. Concurrent reclamation activities and implementation of best management practices (e.g., soil amendments) would minimize impacts to soil resources.

VEGETATION RESOURCES

The Proposed Action would disturb approximately 345 acres of vegetative cover in Hungry Valley. Vegetation would be re-established and designed to produce self-perpetuating native plant communities following cessation of mining and material processing operations.

RANGE RESOURCES

The Proposed Action would result in fewer acres of public land being available for grazing during the 20-year life of the mine operation; until reclamation has restored the land surface. No loss of AUMs on private land is projected as a result of surface disturbance associated with the Project.

WILDLIFE RESOURCES

Primary impacts on wildlife resources resulting from the Proposed Action in the Hungry Valley area would be loss of habitat and subsequent displacement of some species of wildlife. Direct loss of wildlife habitat would eliminate cover (nesting, hiding, and thermal), breeding sites, and forage.

SPECIAL STATUS SPECIES

No threatened, endangered, or candidate species or their habitat would likely be affected by the Proposed Action because none of these species are known to use habitat in or near the Project site in Hungry Valley.

RECREATION

Impacts associated with the Proposed Action would result in fewer acres available for

recreational activities during operation and after cessation of mining until reclamation is complete. Recreational users of the land in the Hungry Valley and immediate vicinity would potentially have to avoid active mine areas for specific activities and events or event staging areas. In addition, recreational users may incur additional access restrictions in the proposed mine areas and haul routes, and would need to avoid potential conflict with mining activities.

CULTURAL RESOURCES

Cultural resources that have been identified by cultural resource surveys conducted on public and private land that would be disturbed by the Proposed Action within the proposed project area would be mitigated or protected in compliance with current regulations.

NATIVE AMERICAN RELIGIOUS CONCERNS/INDIAN TRUST RESPONSIBILITIES

Consultation is ongoing to determine direct or indirect impacts to Native American traditional or religious values. Representatives of the Reno-Sparks Indian Colony have identified impacts to soil, air, water, vegetation, wildlife, cultural resources, and Native American Religious Concerns as relevant to BLM's Indian Trust Responsibilities.

SOCIAL AND ECONOMIC RESOURCES

Positive impacts resulting from implementation of the Proposed Action would be direct employment in the mining industry and secondary employment in the retail and service sectors in the Reno/Sparks area; income generated from wages paid by Oil-Dri and by secondary employers in the area; and property taxes and net proceeds of mining taxes paid by Oil-Dri to local and state jurisdictions. Negative impacts would be minimal because only a small number of construction and operational workers are expected to be hired outside the local labor area.

ENVIRONMENTAL JUSTICE

Native Americans at the Reno-Sparks Indian Colony represent a minority and a low-income population when viewed within the context of environmental justice. Analyses presented in this document indicate that those impacts would not be "adverse" from a technical perspective since they do not have a significant effect on human health or the environment, nor do they exceed established thresholds. Implementation of the Proposed Action or any of the action alternatives would result in impacts, that would be shouldered disproportionately by Native Americans.

ALTERNATIVES

Alternative A – Chickadee Drive Access Route

Impacts to the following resources under this alternative would be similar to the Proposed Action.

Geology, Mineral, and Paleontology; Air Resources; Visual Resources; Water Resources; Soil; Vegetation Resources; Range Resources; Wildlife Resources; Special Status Species; Recreation and Wilderness; Cultural Resources; Native American Religious Concerns/Indian Trust Responsibilities; Social and Economic Resources; and Environmental Justice.

Implementation of Alternative A would reduce overall surface disturbance by approximately 2.7 acres compared to the Proposed Action. Impacts to resources identified above would be proportional to the reduction in disturbance.

Noise

Alternative A would transfer noise associated with approximately 15 to 23 tractor/trailer truck trips per day on the Eagle Canyon Drive route to the Chickadee Drive route. This alternative would result in a reduction in noise levels on Eagle Canyon Drive but would increase them on Chickadee Drive. All trucks associated with the Project would be operated and maintained in compliance with applicable local, state, and federal noise requirements for commercial vehicles.

Transportation

Alternative A would reduce the potential impacts associated with public safety on Eagle Canyon Drive due to trucks descending a steep canyon road and the proximity to the school.

Alternative B –South Access Route

Impacts to the following resources under this alternative would be similar to the Proposed Action.

Geology, Mineral, and Paleontology; Air Resources; Visual Resources; Water Resources; Soil; Vegetation Resources; Range Resources; Wildlife Resources; Special Status Species; Recreation and Wilderness; Cultural Resources; Native American Religious Concerns/Indian Trust Responsibilities; Social and Economic Resources; and Environmental Justice.

Implementation of Alternative B would increase surface disturbance by approximately 2.1 acres compared to the Proposed Action. Impacts to resources identified above would be proportional to the increase in disturbance.

Noise

Alternative B would result in a reduction in noise associated with approximately 15 to 23 tractor/ trailer truck trips per day on the Eagle Canyon Drive route, and result in this traffic related noise being transferred to these areas along the South Access route. All trucks associated with the Project would be operated and maintained in compliance with applicable local, state, and federal noise requirements for commercial vehicles.

Transportation

Alternative B would reduce the potential impacts associated with public safety on Eagle Canyon Drive due to trucks descending a steep canyon road and the proximity to the school. However, implementation of this alternative would place trucks in the proximity of two schools in Golden Valley.

No Action Alternative

The No Action Alternative would prohibit development of clay material resources located on public land included in the Proposed Action. Consequently no development or mining related impacts would occur to existing resources in Hungry Valley.

CHAPTER 1

INTRODUCTION

The Carson City Field Office of the United States Department of the Interior (USDI) Bureau of Land Management (BLM) received a Plan of Operations (Plan) from the Oil-Dri Corporation of Nevada (Oil-Dri) in July 1999 proposing development and mining of locatable clay material and operation of associated processing facilities in Hungry Valley, Washoe County, Nevada (Oil-Dri 1999). Oil-Dri's Reno Clay Plant Project (Project) area is located on public and private land in Washoe County, Nevada, approximately 10 miles north of Reno, Nevada (**Figure 1-1).** Specifically, the Project is located in portions of Hungry and Lemmon valleys. Proposed mining and exploration activities associated with the Project are located on public land administered by BLM; consequently, review and approval of Oil-Dri's Plan are required by BLM pursuant to Title 43, Code of Federal Regulations, Part 3809 (43 CFR 3809) Surface Management Regulations. Due to the potential for the proposed Project to result in significant environmental impacts, BLM determined that an Environmental Impact Statement (EIS) would be necessary, as required by the National Environmental Policy Act of 1969 (NEPA).

BLM is the lead agency in preparing this EIS for the proposed operation with the Reno-Sparks Indian Colony, Washoe County, and the USDI Bureau of Indian Affairs as cooperating agencies. This document follows regulations promulgated by the Council on Environmental Quality (CEQ) for implementing procedural provisions of NEPA (40 CFR 1500-1508) and BLM's NEPA Handbook (H-1790-1).

This EIS describes the components of, reasonable alternatives to, and environmental consequences of proposed exploration, mining, and processing of clay material in the Project area. Chapter 1 describes the purpose and need for the action, role of BLM, and public participation in the EIS process. Chapter 2 provides a historical perspective of mining in the Project area, a description of the existing operations and the Proposed Action, and alternatives to the Proposed Action. Chapter 3 describes the existing environment in the Project area. Chapter 4 details potential direct, indirect, and cumulative effects associated with the Proposed Action and Alternatives, and possible mitigation measures that may be selected to reduce or minimize impacts. Chapter 5 identifies the consultation and coordination with state and federal agencies that occurred during preparation of this EIS and a list of preparers. Chapter 6 contains a list of references cited in developing the EIS.

PURPOSE OF AND NEED FOR ACTION

The purpose of Oil-Dri's proposal is to conduct open pit mining on placer mining claims, and to perform exploration activities to identify additional clay material resources within the Project area. The operation would produce specialized clay material primarily used in sorbent products (cat litter) from reserves contained within the Project area.

AUTHORIZING ACTIONS

A proposal submitted to BLM may be approved only after an environmental analysis is completed. BLM decision options include approving Oil-Dri's Plan as submitted, approving alternatives to the Plan to mitigate environmental impacts, approving the Plan with stipulations to mitigate environmental impacts, or denying the Plan. If BLM approves the Plan, then only those activities on public lands detailed in the Plan would be authorized to occur. If BLM denies the Plan, the applicant can modify and resubmit it to address decisions made by BLM on the original plan regarding unnecessary or undue degradation of federal land and to provide for reasonable reclamation.

Since all of Oil-Dri's projected exploration and mining activities would occur on public land administered by BLM; such operations must comply with BLM regulations for mining on public land (43 CFR 3809, Surface Management Regulations), the Mining and Mineral Policy Act of 1970, and the Federal Land Policy and Management Act of 1976. These laws recognize the statutory right of mining claim holders to develop federal mineral resources under the General Mining Law of 1872. These laws, however, in combination with other BLM policies (i.e., the Lahontan Resource Area Management Plan), also require BLM to analyze proposed mining operations to ensure that: 1) adequate provisions are included to prevent undue or unnecessary degradation of public land, 2) measures are included to provide for reasonable reclamation of disturbed areas, and 3) proposed operations would comply with other applicable federal, state, and local statutes and regulations. In accordance with provisions of 43 CFR 3809 regulations, BLM will conduct periodic inspections of the Project.

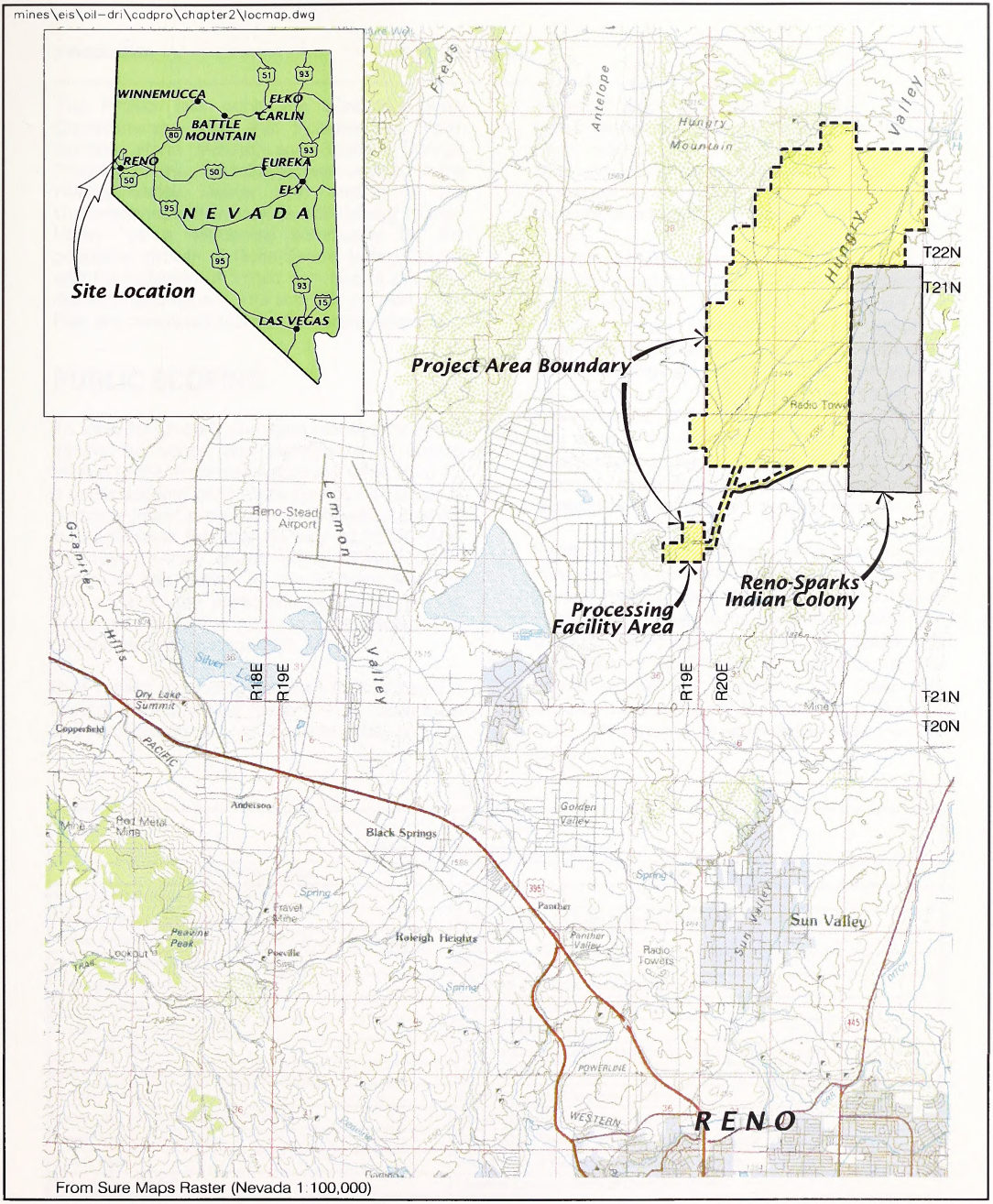
In addition to BLM, other federal, state, and local agencies have jurisdiction (including inspection responsibilities) over certain aspects of the Proposed Action. **Table 1-1** provides a comprehensive listing of the agencies and their respective permit/authorizing responsibilities. The primary permits to be obtained by Oil-Dri include a reclamation permit, air quality operating permit, stormwater discharge permit, and a special use permit.

Nevada Division of Environmental Protection (NDEP) bonding or "surety" requirements for mine reclamation in Nevada are outlined in Nevada Administrative Code (NAC) 519A.350 - 519A.630 regulations. For BLM, the Surface Management Regulations (43 CFR 3809) establish bonding policy relating to mining and mineral development. BLM and NDEP entered into a Memorandum of Understanding (MOU) in 1990 to provide agency coordination in evaluation and approval of reclamation plans and determination of bond amounts for both mining and exploration plan of operations. Estimated costs of reclamation are proposed by mining companies using industry guidelines and standards for equipment, material, and Davis-Bacon Wage Rates for labor. These rates are standards used by BLM and NDEP to determine the bond amount.

RELATIONSHIP TO BLM AND NON-BLM POLICIES, PLANS, AND PROGRAMS

The Plan has been reviewed for compliance with BLM policies, plans, and programs. The proposal is in conformance with the minerals decisions in the Record of Decision, Carson City Field Office, Lahontan Resource Management Plan, approved in March 1985, and amended in January 2001, with the *Final Southern Washoe County Urban Interface Plan Amendment* (BLM 2001). Through the EIS process, the proposed Project is being evaluated for conformance with existing land use restrictions set by the State of Nevada and Washoe County. The Plan is also being reviewed in the context of goals stated in the Reno/Sparks Indian Colony Plan.

The Reno-Sparks Indian Colony *Year 2000 Comprehensive Plan and Parcel Master Plans* (Nevada-Sierra Planners 2000a) was issued in March 2000. The plan established a rectangular "sphere of influence" extending a mile in each direction from existing tribal boundaries that "will serve as a master plan for the future organization of local govemments and agencies with the cities and county. The sphere shall be used to discourage concentration of heavy industry on residential boundaries, retain open space, the proliferation of local governmental agencies, and to encourage efficiency, economy and orderly changes in local government." The *Year 2000 Comprehensive Plan and Parcel Master Plans* generally seeks "to discourage urban sprawl, direct development away from residential land and open-spaced lands, and encourage the orderly formation and development of local government agencies..." In addition "the Tribal Council will seek opportunities for business revenue and employment at Hungry Valley" and "...will take all reasonable steps to oppose the presence of Oil-Dri Corporation in Hungry Valley...(Nevada-Sierra Planners 2000a)." The activities outlined in the Plan are inconsistent with the Reno-Sparks Indian Colony *Year 2000 Comprehensive Plan and Parcel Master Plans.*



March 2001

Location Map
Reno Clay Plant Project
Reno, Nevada
FIGURE 1-1

The Project falls within the Washoe County Comprehensive Plan that includes the Warm Springs, North Valleys, and Spanish Springs Planning Areas. Parcel objectives outlined in the Hungry Valley Master Plan section of the Comprehensive Plan include maintaining Hungry Valley "as a residential community for the population growth of Reno-Sparks Indian Colony with the inclusion of limited commercial and light industrial land uses." The activities outlined in the Plan are consistent with the Comprehensive Plan.

PUBLIC SCOPING

To allow for an early and open process for determining the scope and significance of issues related to the Proposed Action (40 CFR 1510.7), a public scoping period was provided by BLM. A Notice of Intent to prepare the EIS was published in the Federal Register on July 22, 2000 (NV-030-1990-EX-136, pages 43779-43780). Publication of this notice in the Federal Register initiated a 30-day public scoping period for the Proposed Action that provided for acceptance of comments through August 21, 2000.

BLM mailed a scoping package that included a Project summary and maps to 111 individuals and organizations. In addition, the scoping package was distributed at public scoping meetings and the Plan of Operations provided upon request. Concurrent with these actions, BLM issued a news release to local news organizations and radio stations with coverage in the surrounding geographical regions.

A public scoping meeting was held by BLM in Reno on August 8, 2000. The scoping meeting was attended by 20 people who signed the meeting registry. Presentations were made to three Washoe County Citizen Advisory Boards; Spanish Springs on August 9, 2000, North Valleys on August 14, 2000, and Sun Valley on September 12, 2000. In addition, a presentation was made to the Reno/Sparks Indian Colony at a community meeting on August 15, 2000. Three hundred ninety-eight written comments were received by BLM during the scoping period.

Public and agency comments concerning the Proposed Action are grouped according to general subject area and are summarized in **Table 1-2**. Comments received during the scoping period are included in **Table 1-2** regardless of applicability or relevance to the Project or the EIS process. This table also provides references to the sections of the EIS which will respond to each issue raised in the comments.

TABLE 1-1
Regulatory Responsibilities

Authorizing Action	Regulatory Agency
National Environmental Policy Act	BLM
National Historic Preservation Act	BLM; Nevada Division of Historic Preservation & Archaeology
Native American Graves Protection & Repatriation Act	BLM
American Indian Religious Freedom Act	BLM
Endangered Species Act of 1973	U.S. Fish & Wildlife Service (USFWS)
Industrial Artificial Pond Permit	Nevada Division of Wildlife (NDOW)
Water Appropriation Permits	Nevada State Engineer
Air Quality Permit	Washoe County District Health, Air Quality Management
Mine Reclamation Permit (and Bonding)	BLM; NDEP Bureau of Mining Regulation & Reclamation (BMRR)
Building Permits	Washoe County Planning Department
Hazardous Materials Business Plan	Nevada Emergency Response Commission
Sewer System Approvals	NDH, NDEP Bureau of Water Pollution Control, Washoe County
Safety Plan	Mine Safety & Health Administration (MSHA)
Special Use Permit	Washoe County Board of Commissioners

TABLE 1-2
Scoping Summary – Reno Clay Plant Project EIS

Issues	Draft EIS Section
Proposed Action	
Description of Proposed Action should contain facility design, operation, maintenance, monitoring systems, long-term exploration and development of related minerals.	Chapter 2 – Proposed Action Chapter 4 - All Resources
Mining and Reclamation Plan should be described.	Chapter 2 – Proposed Action
Relocate mine to a more remote area.	See Alternatives Considered but Dismissed from Further Analysis Section in Chapter 2.
Describe closure and securing mine areas during reclamation.	Chapter 2 – Proposed Action Chapter 4 – Wildlife
Alternatives and Mitigation Measures	
Evaluate all reasonable alternatives to the proposed mining and haul routes and describe appropriate mitigation measures.	Chapter 2 – Alternatives Chapter 4 - All Resources
Describe implementation of mitigation measures.	Chapter 2 – Alternatives Chapter 4 - All Resources
Identify mitigation measures to prevent contamination of rainfall/snowmelt.	Chapter 2 – Alternatives Chapter 4 - Water Resources
Describe mitigation of air and noise emissions.	Chapter 2 – Alternatives Chapter 4 - Air Quality Chapter 4 – Aesthetics (noise and visual)
Describe mitigation of reclamation failure.	Chapter 2 – Alternatives Chapter 4 - Soil, Vegetation, Wildlife, Water Resources
Describe mitigation measures identified to reduce impact of discharge under 404 Permit.	Chapter 2 – Project Alternatives Chapter 4 – Water Resources
Describe mitigation and implementation of measures to reduce, avoid, or compensate for habitat loss.	Chapter 2 – Alternatives Chapter 4 – Wildlife
Existing Environment	
Existing soil characteristics should be described.	Chapter 3 – Soil
Original drainage patterns in the Project area should be described; characteristics of surface water and groundwater resources should be described including flow, quality, quantity, permeability, water table, etc.	Chapter 3 – Water Resources Chapter 3 – Soil
Water Resources	
Evaluate potential effects on surface and stormwater, springs, seeps, wetlands, vegetation, and wildlife.	Chapter 4 – Water Resources Chapter 4 – Vegetation, Wildlife, Soil
Water Rights	
Evaluate water rights associated with current and future needs.	Chapters 3&4 – Water Resources
Wildlife and Vegetation	
Evaluate spread of noxious weeds in the mine areas	Chapter 3&4 – Vegetation/Grazing Management
Describe effects of Project on high desert habitat.	Chapter 4 – Vegetation Chapter 4 – Wildlife
Potential impact on biological components, including destruction or alteration of breeding, nesting, cover, migration, and foraging habitats, should be described.	Chapter 4 – Wildlife Chapter 4 – Threatened, Endangered, Candidate, and Special Status Species

TABLE 1-2 (continued)
Scoping Summary – Reno Clay Plant Project EIS

Issues	Draft EIS Section
Wildlife and Vegetation	
Consult U.S. Fish and Wildlife Service and Nevada Division of Wildlife regarding Project.	Chapter 1 – Cooperating Agencies/Chapter 5 – Consultation and Coordination Chapter 5 – Consultation, Coordination, and Preparation Chapter 4 – Threatened, Endangered, Candidate, & Special Status Species
Evaluate impacts to native and medicinal plants	Chapter 4 – Vegetation Chapter 3 & 4 – Cultural Resources
Assess vegetation response to 'Waters of the U.S.'	Chapter 4 – Vegetation
Unique plant communities, wetlands and riparian areas, raptor nest sites, sage grouse habitat, winter and summer range for deer and antelope, and corridors should be evaluated.	Chapters 3 & 4 – Wildlife Chapters 3 & 4 – Vegetation
Evaluate impacts to wildlife habitat	Chapter 4 – Wildlife
Land clearing activities should occur outside of the avian breeding season.	Chapter 3 & 4 – Wildlife
Evaluate exposure of fish and wildlife to hazardous chemicals; transportation routes and spill response procedures.	Chapter 2 – Existing Operations/Proposed Actions Chapter 4 – Wildlife
Soil	
Potential impact on soil quality resulting from the Project should be described.	Chapter 4 – Soil
Aesthetic (noise and visual)	
Evaluate impacts of mine to visual qualities, including light pollution.	Chapter 4 – Aesthetics (noise and visual)
Describe effects of noise and artificial lighting on residential communities and wildlife.	Chapter 4 – Aesthetics (noise and visual) Chapter 4 – Wildlife
Threatened, Endangered, and Candidate Species/Species of Concern	
Describe impacts on federally listed species and species of concern.	Chapter 4 – Threatened, Endangered, Candidate, and Special Status Species
Identify federally listed species or species of concern which may occur in the area, be affected by the Project, or occur in the cumulative effects area.	Chapter 4 – Threatened, Endangered, Candidate, and Special Status Species
The cumulative effects area for analysis of threatened, endangered, and special status species should be described.	Chapter 4 – Threatened, Endangered, Candidate, and Special Status Species Chapter 4 – Cumulative Effects
Describe effects of the Project on rare or threatened plant life and wildlife species	Chapter 4 – Threatened, Endangered, Candidate, and Special Status Species
Mine Reclamation	
Describe reclamation activities, schedule, reclamation success monitoring, and maintenance of reclaimed areas.	Chapter 2 – Proposed Action Chapter 4 – Vegetation
Describe reclamation bonding requirements and post-closure responsibility.	Chapter 2 – Proposed Action
Describe the use of native vegetation species in seed mix.	Chapter 2 – Proposed Action Chapter 4 – Vegetation

TABLE 1-2 (continued)
Scoping Summary – Reno Clay Plant Project EIS

Issues	Draft EIS Section
Environmental Justice/Native American Concerns/Indian Trust Responsibilities	
Describe the potential effects of the Project on low-income and minority populations in Project area and potential impact on Reno-Sparks Indian Colony. Agencies should consult with tribal members.	Chapters 3 & 4 – Cultural Resources/Native American Religious Concerns Chapters 3 & 4 – Socioeconomic Resources
Air Quality	
Discuss application of National Ambient Air Quality Standards and Prevention of Significant Deterioration increments to Project area.	Chapters 3 & 4 - Air Quality
Estimate emissions for proposed project including excavation, construction, operation, processing, and support activities.	Chapter 4 – Air Quality
Describe impacts on human health from dust emissions.	Chapter 4 – Air Quality
Evaluate Class I airsheds near Project area.	Chapter 3 – Air Quality
Describe conformity of Project with Nevada State Implementation Plan.	Chapters 3 & 4 - Air Quality
Describe air quality monitoring program for the Project.	Chapter 2 – Proposed Action
Land Use and Grazing/Recreation	
Assess impacts to open space	Chapter 4 – Land Use
Describe livestock grazing in the Project area and changes in current grazing practices and recreation use of the area.	Chapters 3 & 4 – Grazing Management Chapter 3 & 4 – Recreation and Wilderness
Power Line	
Evaluate electrical requirements during construction and operation of the Project.	Chapter 2 – Proposed Action
Cumulative Effects	
Cumulative effects area for analysis of threatened, endangered, and special status species should be described.	Chapter 4 – Threatened, Endangered, Candidate and Special Status Species Chapter 4 – Cumulative Effects
Cumulative effects of additional mineral production should be evaluated.	Chapter 4 – Geology, Minerals, and Visual Resources
Cumulative effects analysis should address air quality, hydrology, soil, vegetation, wildlife, and biodiversity.	Chapter 4 – Cumulative Effects
Transportation	
Address impacts related to increased heavy truck traffic including air brakes, through residential and school zones.	Chapter 3 & 4 – Social and Economic Resources
Address road maintenance and snow removal	Chapter 2 – Proposed Action
Complete traffic study within the Project area to identify additional impacts on existing highways and roads.	Chapters 3 & 4 – Social and Economic Resources Chapters 3 & 4 – Access and Land Use
Socioeconomic/Tribal Trust Responsibilities	
Socioeconomic impacts including taxes, land values, demographics, and income should be described.	Chapter 3 & 4 – Social and Economic Resources

CHAPTER 2
DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

INTRODUCTION

This chapter describes Oil-Dri's Proposed Action to mine a locatable clay material deposit in the Hungry Valley area north of Reno/Sparks Nevada, and alternatives to the Proposed Action. The proposal to develop and process clay material from Hungry Valley is collectively referred to as the Reno Clay Plant Project (Project) or the Proposed Action in this document.

Alternatives considered in this EIS are based on issues identified by BLM and cooperating agencies as well as comments received during the public scoping process. Alternatives are intended to reduce or minimize potential impacts associated with the Proposed Action while still meeting the purpose and need of the Proposed Action.

Detailed discussions of the following topics are presented in this chapter:

- History of mineral exploration and mining in the Project area.
- Oil-Dri's Proposed Action for the Project; and
- Alternatives to the Proposed Action, including the No Action Alternative and Alternatives Considered but Eliminated from Detailed Analysis.

PROJECT HISTORY AND EXISTING OPERATIONS

The Project area (the mine and processing areas located in Hungry Valley and Lemmon Valley (**Figure 2-1**) consists of sedimentary rocks and clay material formed between 3 and 7.5 million years before present. The clay material, believed to be a depositional formation, occurs as thin beds or laminations, and measures up to 98 feet in thickness. In July 1999, Oil-Dri Corporation of Nevada submitted a Plan of Operations to the Carson City Field Office of the BLM. The Plan of Operations described mining and processing of clay mineral deposits located in the Hungry Valley area (see Chapter 1). In response to public controversy associated with development of the clay deposits, BLM determined that an EIS would be necessary for the proposed project. Issues raised by the public concerning the Project include potential for noise, dust, traffic conflicts, and impacts on existing recreational uses resulting from mining operations in Hungry Valley.

In May 2000, BLM mineral examiners determined the clay material to be "locatable" and therefore its mining must comply with BLM regulations for mining on public land (43 CFR 3809, Surface Management Regulations). In addition, these activities must comply with the Mining and Mineral Policy Act of 1970, the Materials Act of 1947, and the Federal Land Policy and Management Act of 1976.

There are no other known or proposed mining operations on or near the Project area. A small private sand and gravel operation is located approximately one-half mile southwest of the Project area (Hungry Valley Sand Pit). At the present time, BLM is analyzing a proposal to expand this pit onto public land.

LOCATION AND LAND OWNERSHIP

The Project area lies in Hungry Valley between the Warm Springs Mountains on the west and the Hungry Hills on the east. The Project is located in Sections 13 and 24, Township 21 North, Range 19 East; Sections 28 through 33, Township 22 North, Range 20 East; and Sections 5 through 8 and 17 through 19, Township 21 North, Range 20 East, Mount Diablo Base and Meridian; all in Washoe County, Nevada. The Project area comprises Oil-Dri's mineral claim boundary totaling approximately 5,827 acres.

Mining of clay material would occur on approximately 271 acres (out of the total 5,827 acres of claims) of placer claims controlled by Oil-Dri. The material would be transported to a new Processing Facility to be constructed on land owned by Oil-Dri. The Processing Facility would be located in the SE ¼ Section 24, Township 21 North, Range 19 East (**Figure 2-1**).

Previous exploration activities in the Project area include core drill cross-country tire tracks, drill sites, and sumps; and excavation of trenches and test pits. Oil-Dri is currently authorized to disturb 5 acres for exploration activities in the Project area. Geologic evaluations (exploration activities) are authorized under a Notice Level approval.

Figure 2-1 depicts surface ownership of land within the Reno Clay Plant Project area. Rights-of-way easements are discussed in Chapter 3, *Land Use and Access*.

PROPOSED ACTION

In July 1999, Oil-Dri submitted a proposed Plan of Operations (Plan) for the Reno Clay Plant Project to BLM. The Proposed Action described in the Plan includes:

- Development of open pit mining operations in the North Mine Area and South Mine Area;
- Construction and operation of a Processing Facility on private land;
- Construction of 0.8 miles of new road connecting to Eagle Canyon Drive;
- Upgrading the existing Eagle Canyon Drive;
- Construction and upgrading Main Haul Road and mine access roads; and
- Continued exploration for clay minerals within the Project area.

The location of the proposed Project is shown in **Figure 2-1**. The total area of proposed disturbance for the Project would be approximately 345 acres, which includes 305 acres of public land and 40 acres of private land. Disturbance on public land would consist of approximately 136 acres at the North Mine Area and 135 acres at the South Mine Area (271 acres total); 14 acres to provide primary access and haul roads; and, 20 acres for continuing exploration activities. Construction of the Processing Facility would disturb up to 40 acres of private land in a 120-acre parcel controlled by Oil-Dri. Proposed disturbance areas are shown in **Figure 2-1** and **Table 2-1**.

Under current operating plans and projections, Oil-Dri anticipates the Project to have a mine life of 20 years. Mining and processing operations would employ approximately 100 persons. The Processing Facility would be constructed by private firms employing approximately 75 persons over a one-year period.

TABLE 2-1
Proposed Disturbance In the Reno Clay Plant Project Area

Proposed Action	Public Land (acres)	Private Land (acres)	Total Land (acres)
North Mine Area	136	0	136
South Mine Area	135	0	135
Proposed Access Road	5	0	5
Main Haul Road	9	0	9
Processing Facility	0	40	40
Exploration Activities	20	0	20
Total Proposed Disturbance	**305**	**40**	**345**

Source: Oil-Dri 1999.

mines\eis\oil-dri\cadpro\chapter2\area-map.dwg

RENO-SPARKS INDIAN COLONY

NORTH MINE AREA

SOUTH MINE AREA

PROCESSING FACILITY AREA

PROJECT AREA BOUNDARY

Reno Radio Control Model Airplane Club

Well

Power Line

Main Haul Road

To Pyramid Highway

Proposed Access Route via Eagle Canyon Drive (See Figure 2-7)

South Access Route - Alternative B (See Figure 2-7)

Chickadee Drive Access Route - Alternative A (See Figure 2-7)

To Golden Valley

To Lemmon Drive

HUNGRY VALLEY

SPANISH SPRINGS VALLEY

HUNGRY HILLS

T22N

T21N

T20N

R20E

R19E

Map Base Source: Oil-Dri, October, 2000

March 2001

N

0 Feet 3000

- Drainage
- Secondary Road
- Private Land
- Recreation and Public Purposes Lease
- Indian Land or Reservation
- Military Reservation and Withdrawals Corps of Engineers
- Public Land (Administered By Bureau of Land Management)
- Main Haul Road
- Power Line
- Eagle Canyon Drive (Proposed Access Route)
- Chickadee Road Access Route (Alternative A)
- South Access Route (Alternative B)

Area Map
Reno Clay Plant Project
Reno, Nevada
FIGURE 2-1

MINE DEVELOPMENT AND OPERATION

Initial development of ore reserves in the North and South Mine areas would be preceded by stripping and salvaging approximately one-foot of growth media from the first three mine panels. Each panel is approximately 150 by 400 feet (1.4 acres). This would generate approximately 8,600 cubic yards (includes 1.3 swell factor) of growth media at each mine area that would be placed in life-of-mine stockpiles for use in final reclamation activities at the end of mine life. Growth media stockpiles would be approximately 10-feet high, 80 feet wide, and 600 feet long (1.1 acres) with 3H:1V slopes. The stockpiles would be seeded with a BLM-recommended seed mix to provide a stable vegetative cover. Locations of the growth media stockpiles are shown in **Figure 2-2**. Growth media would also be salvaged from the Processing Facility site and stock-piled for use in reclamation at the end of mine life.

Overburden from the first two mine panels would be removed and placed in life-of-mine stockpiles for use in final reclamation. Stockpile locations are shown in **Figure 2-2.** Assuming an average depth of 9-feet, and a 1.3 swell factor, approximately 52,000 cubic yards of overburden would be excavated. Overburden material would be stockpiled separately from the growth media. The overburden stockpile would be approximately 700 feet long, 160 feet wide, and 25 feet high (2.5 acres) with 3H:1V slopes. The overburden stockpiles would be seeded to establish a vegetative cover. A portion of the overburden from initial panel development would be used to construct a berm around the active mine panels to prevent surface water run-on from entering the mine area. The berm would be approximately 5 feet high by 15 feet wide with 1.5H:1V slopes. Approximately 2,800 cubic yards of overburden material would be used to construct the berm.

The growth media and overburden stockpiles would be fenced to protect seeded areas from livestock grazing and other activities that would be harmful to establishment of vegetation. A fence would be constructed around the active mine areas outside of the safety berms to ensure public safety and protect revegetated areas from disturbance and livestock grazing. Fences would consist of steel posts every 15 feet with three strands of smooth wire. Reflectors and flags would be placed at 15-foot intervals along the fence. Warning signs would be attached to the fence every 50 feet. The fence would be dismantled after the areas are released from bonding by BLM and NDEP.

Ore from the first two panels would be mined using conventional truck and shovel methods. Sequential mine panels would be developed as clay material is removed and mining advances. **Figure 2-3** provides a diagrammatic sketch of the material handling sequence to be used in each mine area. **Figure 2-4** is a schematic flow diagram that shows the proposed operations.

After clay material is removed from panel #2, overburden from panel #3 is stripped and placed as backfill in panel #1. Growth media from panel #4 would then be salvaged and placed over the regraded backfill (overburden) placed in panel #1. The cycle would repeat as mining advances. Oil-Dri estimates approximately five panels, or about 8 acres, would be mined each year at each mine area. Surface disturbance would consist of two mine panels (approximately 2.8 acres) undergoing active mining, one panel stripped of growth media and overburden exposed (approximately 1.4 acres), and one previously mined panel (approximately 1.4 acres) awaiting placement of growth media. Panels mined earlier in the sequence would be in the final stages of reclamation with seedbed preparation, soil amendments, and seeding occurring in the first appropriate season following placement of growth media (see *Reclamation* section). Depth of the cuts would vary from 20 to 70 feet depending on thickness and quality of the clay material. Overburden in the area ranges from zero to 28 feet in thickness. A typical cross-section of the mining sequence is shown in **Figure 2-3.**

As mining progresses, berms would be used as backfill in mined-out panels and new berms placed with overburden from new panels as mining progresses. Mining in the North Mine Area would commence in the northeast corner and proceed in sequential fashion toward the south and west. Operations in the South Mine Area would commence in the southern portion of the area and progress northward. At the end of mine life (approximately 20 years) the life-of-

mine growth media and overburden stockpiles created during initial mine development would be used to reclaim the final mine panels (see *Reclamation* section).

The mining technique in the South Mine Area would be the same as that used in the North Mine Area. Mining would occur 10 hours per day, five days per week, and would produce approximately 270,000 tons per year (TPY) of raw material. Mining and hauling would be performed by one individual driving a haul truck to the mine area, self-loading using a backhoe or loader, and returning to the Processing Facility for off-loading. This scenario would continue for 10 hours per day, five days per week. Mining in the North Area may involve two trucks operating under this scenario. Mining equipment would be equipped with backup alarms for use during daylight hours and backup strobe lights during non-daylight hours to minimize or eliminate noise at night.

Reclamation activities would be concurrent with backfilling operations on mined-out portions of each mine site. Over the mine life, up to 2.3 million tons of material may be excavated from the North Mine Area and up to 4.6 million tons from the South Mine Area.

ORE PROCESSING

Ore mined from the North and South Mine areas would be processed at a proposed Processing Facility located on private land approximately 2 miles southwest of the South Mine Area **(Figure 2-1)**. Approximately 40 acres of surface disturbance would be associated with the Processing Facility. Prior to construction, approximately one-foot of growth media (64,500 cubic yards) would be stripped from the proposed construction site and stockpiled for final reclamation activities. The growth media stockpile would be enclosed with a fence and seeded to provide a protective vegetative cover.

Ore would be transported to the facility using 25 to 35-ton haul trucks and would be stockpiled near the primary crusher. Stockpile capacity would range from 500 to 2,500 tons of raw material at any given time. During processing, raw clay material is fed via belt conveyors into a primary roll crusher, a secondary roll crusher, and then to a rotary dryer. The clay material is then transported by a bucket elevator to the mill building where it is screened, milled, sized, and packaged. Three baghouses would be used to control emissions from the Processing Facility. All major equipment used in the Processing Facility would be located inside insulated buildings to reduce noise.

Approximately 270,000 tons of raw clay material would be processed annually. As a result of processing, about 135,000 tons would be packaged and sold as industrial and consumer absorbents, and 67,500 tons as a fine-grained, off-specification material that would be sold as a byproduct to the agricultural market as a flow enhancer in grain handling operations. This flow enhancer (flo-free®) is used to absorb excess moisture and reduce clumping of grain products. The off-specification material shipped from site would be non-hazardous, Bevill exempt waste material sold in bulk containers and transported by truck. The remaining 67,500 tons of off-specification material would be returned to the North and South Mine areas for use as backfill using covered 20-ton belly-dump trucks. Off-specification is either clay ore that is mixed with overburden or clay ore from the crushing and screening operations that is too fine-grained for use in Oil-Dri's normal range of products. Off-specification clay material would not contain any additives. The off-specification material used as backfill would be a non-hazardous, Bevill exempt waste material. Processing of raw clay material would occur 24-hours per day, seven days per week. (Tonnage figures referenced above are for comparative purposes only as the relationship between moisture loss and clay expansion varies).

Oil-Dri would be flexible in the product shipping schedule to avoid heavy truck traffic or congestion during the start or end of classes in the vicinity of the Spanish Springs High School on Eagle Canyon Drive. Current schedule for Washoe County High Schools indicates classes beginning at 7:00 a.m. and ending at 2:15 p.m. Shipping schedules would also avoid traveling through residential areas after 11:00 p.m. and before 7:00 a.m. Approximately 99 percent of truck traffic from the processing Facility would be destined for Interstate Highway 80.

mines\eis\oil-dri\codpro\chapter2\mine-dir.dwg

Fence

Run-on Berm

North Mine Area Boundary

Initial Mine Panels - See Figure 2-3

1 2 3 4

Mine Access and Haul Road

Overburden Stockpile

Growth Media Stockpile

T22N - R20E Section 32

Section 5 T21N - R20E

Powerline

Overburden Stockpile

Well

Fence

Growth Media Stockpile

South Mine Area Boundary

Fence

Run-on Berm

4 3 2 1

Initial Mine Panels - See Figure 2-3

Mine Access and Haul Road

T21N - R20E Section 7

Section 18 T21N - R20E

Source: Oil-Dri, 2000

March 2001

N

0 Feet 600

New Road Construction

Mine Pit Boundary

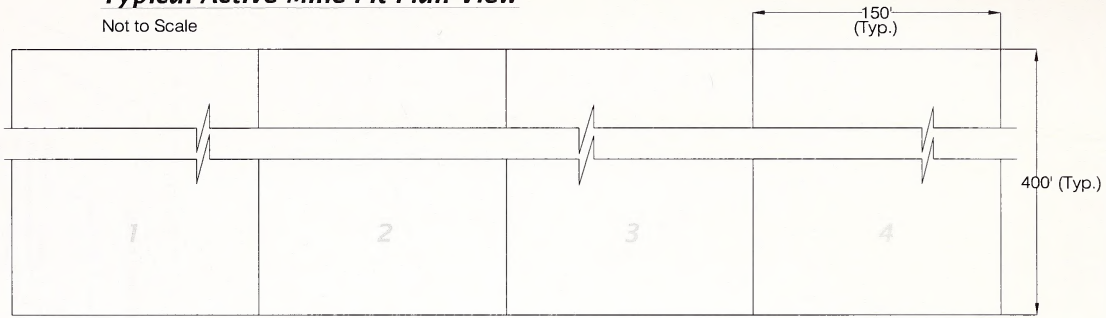
Existing Road

Powerline

Proposed Mine Areas
Reno Clay Plant Project
Reno, Nevada
FIGURE 2-2

Typical Active Mine Pit Plan View

Not to Scale



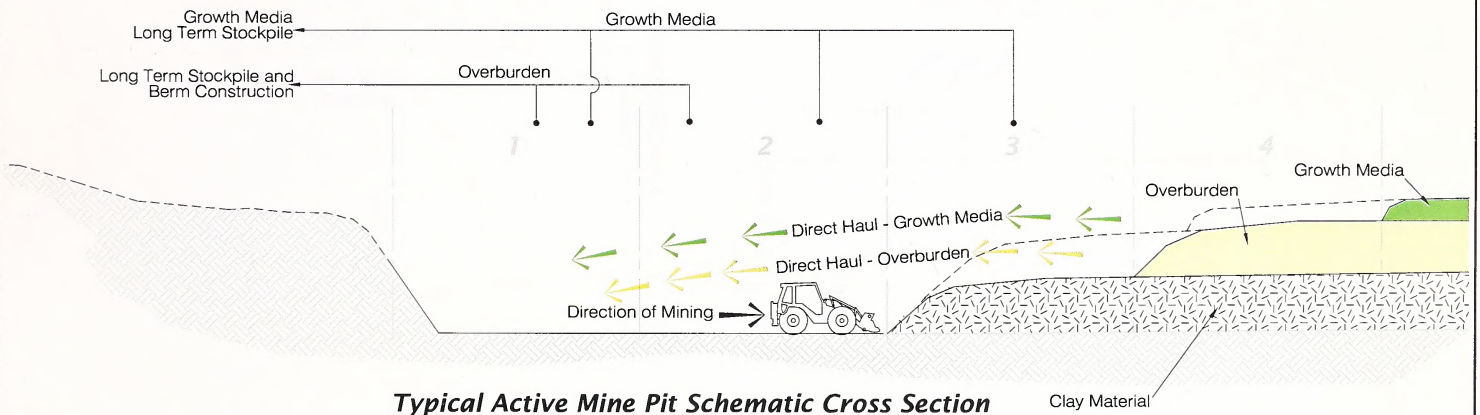
Initial Mine Development

- *Growth media from #1, #2, and #3 to long term stockpile*
- *Overburden from #1 to construct berm, remainder to long term stockpile*
- *Overburden from #2 to long term stockpile*

BEGIN REMOVAL OF CLAY FROM #1 AND #2

Direct Haul Begins

- *Overburden from #3 to backfill #1 after clay removal*
- *Growth media from #4 to cover panel #1*



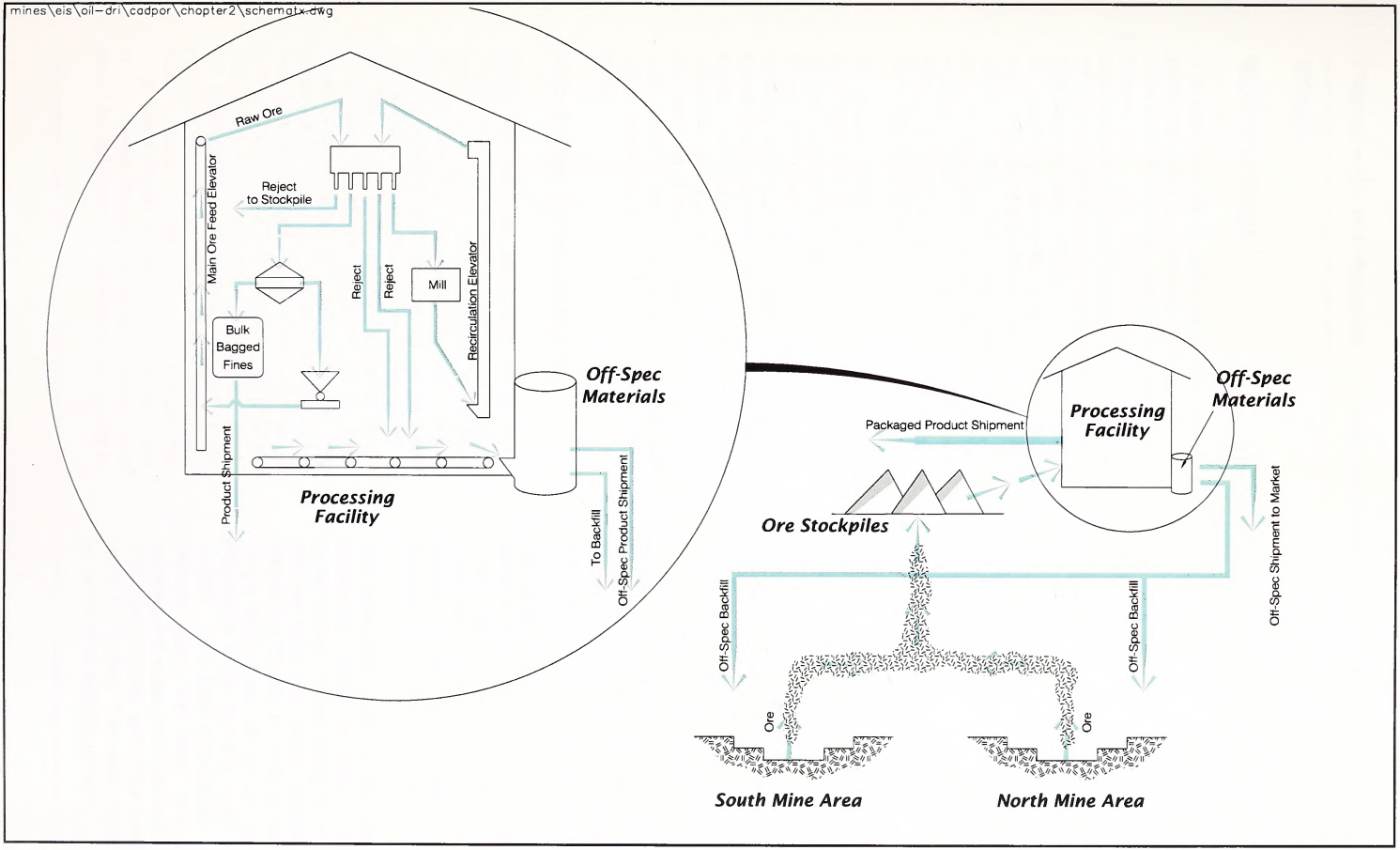
Typical Active Mine Pit Schematic Cross Section

Not to Scale

March 2001

Overburden
Growth Media
Clay Material

Active Mine Pit
Schematic Cross-Section and Plan View
Reno Clay Plant Project
Reno, Nevada
FIGURE 2-3



March 2001

Schematic of Proposed Operation
Reno Clay Plant Project
Reno, Nevada
FIGURE 2-4

ROADS

Main Haul Road

The Main Haul Road within the Project area that would be used to transport material from the mine areas to the Processing Facility is shown in **Figure 2-1.** The length of the haul route is approximately 4 miles. Approximately 3.25 miles of existing road would be regraded and widened from approximately 20 feet to an overall width of 35 feet to accommodate safe passage of haul trucks and mine equipment. Approximately 0.75 miles of new road construction would be required to access the North Mine Area from the existing road. Total surface disturbance associated with construction and upgrading of haul roads would be 9.1 acres.

To ensure public safety, Oil-Dri would require haul trucks to operate with headlights on and provide appropriate signage on the Main Haul Road. The Main Haul Road would have signs warning of heavy truck traffic and a posted speed limit of 30 miles per hour (mph) for Oil-Dri traffic. All intersecting roads would be signed indicating entrance to an active haul road and the presence of heavy equipment. Access roads onto active mine areas would be posted with signs restricting entry and appropriate speed limits.

Access and Transport Routes

Oil-Dri has identified two access routes to the Project area that would be used by employees, vendors, and for transportation of finished product from the Processing Facility. Primary access to the Project area would be via Eagle Canyon Drive, west on Hungry Valley Road to the Main Haul Road, thence southwest to the Processing Facility or northeast to the mine areas. Approximately 0.8 miles of new road construction would be required across public land to connect Eagle Canyon Drive with Hungry Valley Road. Total surface disturbance associated with construction of this road would be approximately 3.4 acres. Oil-Dri would maintain the Hungry Valley Road from Eagle Canyon Drive to the Processing Facility and mine areas during the life of the Project. The Hungry Valley Road from Eagle Canyon Drive would be widened from approximately 15 feet to an overall width of 35 feet, reconstructed with a gravel base, and treated to control dust.

Within three years, or as required by Washoe County, Oil-Dri would install a 2-inch asphalt overlay on existing asphalt on Eagle Canyon Drive from the Spanish Springs High School to the intersection with Hungry Valley Road. Washoe County would assume jurisdiction of the paved portion of Eagle Canyon Drive after the overlay is completed. Construction and reconstruction associated with improvements to the East Access road and Eagle Canyon Drive are estimated to cost approximately $1,074,150.00 in 2000 dollars.

Oil-Dri estimates 70 percent of the employees would use the Eagle Canyon Drive access route comprising up to 70 round trips per day. In addition, Oil-Dri would use this route to ship finished product by tractor/trailer trucks. About 15 round-trips per day, six days per week would be required to ship finished product during initial stages of the project. Up to 23 trips per day are estimated to occur when the facility reaches full production. All trucks associated with the Project would be operated and maintained in compliance with applicable local, state, and federal noise requirements for commercial vehicles. According to an "Offer of Dedication and Road Dedication Agreement" dated January 9, 1990 between Washoe County, Rocky Ridge, Inc. and the Spanish Spring Association, approximately 1,300 feet of Eagle Canyon Drive at the junction with Pyramid Lake Highway is subject to a negative covenant that prohibits "all regular traffic by trucks, tractor-trailers, or other vehicles with a gross weight in excess of eight thousand (8,000) pounds...across land owned by the Spanish Springs Association in Spanish Springs Valley."

The secondary route to the Project area for employees would be from Chickadee Drive along Hungry Valley Road to the intersection with the Main Haul Road, thence south to the Processing Facility or north to the mine areas. Oil-Dri anticipates up to 30 percent of the employees would use this route to access the Project. New road construction would not be required along this route and Oil-Dri would maintain this route from Chickadee Drive to the Processing Facility and mine areas during the life of the Project. This route would not be used for transport of finished product.

ANCILLARY FACILITIES

Ancillary Facilities at the Project would include administrative offices, an employee parking area, growth media and clay material stockpiles, loading and shipping facility for tractor trailer units, equipment and vehicle fueling facility, and an aboveground storage tank for fuel oil and diesel fuel. The Ancillary Facilities would be located at the Processing Facility area shown on **Figure 2-1**. The Processing Facility would be patrolled to provide site security.

Lighting in the Processing Facility area would be consistent with Washoe County requirements (Washoe County 1999a). Lighting would consist of photocell-equipped lights with glare reducing shields or hoods attached to five, 20-foot poles in the parking area and three, 20-foot poles in the general vicinity of the feed stockpiles. All other lights (approximately 14) would be shielded and mounted on buildings with individual shut-offs (photocells and motion sensors), so that only areas occupied would be illuminated to provide safe performance of duties at night. As a requirement of Washoe County, the four-foot tall monument type sign at the entrance to the Processing Facility would be externally illuminated with directional lighting.

The South Mine Area would be lighted by a cluster of four mercury vapor lights (powered by a generator) mounted on a 20-foot pole. The lighting unit (lights, pole, and generator) would be located on the pit floor, ten to 50 feet below grade and angled down to provide illumination at night during backfill operations. This lighting unit would operate continuously during night backfilling operations.

Energy

Electrical power would be provided by accessing an existing Sierra Pacific Power Company distribution line. A new 3-phase, overhead 200 ampere powerline from the existing distribution line would be installed to service the Processing and Ancillary Facilities. The location of the new powerline is shown on **Figure 2-1**. Recycled oil, #2 diesel, or #5 fuel oil meeting regulatory standards for the amount of contained sulfur or natural gas would be used to provide heat for drying the clay ore. Propane, natural gas, or electricity would be used for space heating. Equipment and vehicles would use diesel fuel or unleaded gasoline.

Water Supply and Use

The Proposed Action would require up to 13.5 acre-feet of water per year to control fugitive dust in active mine pits, on access and haul roads in the Project area, and for processing activities. This equates to approximately 8 gallons per minute, assuming constant use. Oil-Dri currently owns sufficient water rights in Lemmon Valley to meet these needs. Oil-Dri has applied to the Nevada State Engineer to amend these water rights for use in the Project, which includes a change in the point of diversion and manner of use. Groundwater would be obtained from an existing well located in the processing area and used for material processing, mining activities, and dust control. Drinking water for human consumption at the facility would be provided by truck from a private vendor in accordance with Washoe County Health Department requirements.

GEOLOGIC EVALUATIONS

Oil-Dri proposes to continue geologic evaluations within the Project area during the life of the Project under this Plan of Operations in order to identify extent and grade of clay material for potential future development. Geologic evaluation activities would include exploration and development drilling, geochemical sampling, excavation of test pits, trenching, and application of various geophysical methods. Exploration drilling would be performed using a truck mounted core rig, one or two 2,000-gallon water truck(s), and 4-wheel drive vehicles to transport operators and supervisors to the drill sites. Surface disturbance created by drilling operations would consist of cross-country tire tracks, cuttings, and sumps. These activities would be conducted in accordance with applicable BLM and NDEP regulations and would result in a maximum disturbance of 20 acres over the anticipated life of the mine.

RESOURCE MONITORING

Air Quality

Oil-Dri is seeking an air quality permit for the Project from Washoe County. The permit would

specify air quality monitoring requirements. Fugitive emissions would be controlled by using Best Management Practices (BMPs) as outlined in the Handbook of Best Management Practices (Nevada State Conservation Commission 1994). Dust emissions would be controlled through use of direct water application, chemical binders or wetting agents, dust collection devices, water sprays, and revegetation of disturbed areas concurrent with operations. Stationary sources of regulated air pollutants would be controlled with baghouses to meet conditions of the air quality permit.

Water Resources

Stormwater would be controlled using BMPs as defined by the Nevada State Conservation Commission (1994) and would include material handling procedures that minimize exposure of materials to stormwater; spill prevention and response measures; sediment and erosion control; and physical stormwater controls. Stormwater run-on would be controlled by installing interceptor ditches around surface facilities.

Oil-Dri would monitor water wells located within 0.5 miles of the Project's water production wells. Oil-Dri would measure water levels of these residential wells on a monthly basis provided owners allow access to the respective wells.

Cultural Resources

Inventories for cultural resources to date indicate there may be several prehistoric period sites that are eligible for the National Register of Historic Places that would be impacted by the Project. BLM, in consultation with Nevada State Historic Preservation Office (SHPO), will address a data recovery plan as soon as all survey and testing phases have been completed and reports have been submitted. Any new eligible sites that may be discovered during future cultural inventories would be mitigated by Oil-Dri in accordance with Section 106 of the National Historic Preservation Act. For additional discussions of cultural resources, see Chapters 3 and 4, *Cultural Resources*.

Paleontological Resources

In the event rare plant fossils, invertebrate, or vertebrate fossils are discovered within the Project area during the mining or construction operations, Oil-Dri would immediately notify the BLM Authorized Officer and cease mining activities in the immediate vicinity of the discovery.

HAZARDOUS MATERIALS

Quantities Greater Than Reportable Quantities

The term "hazardous materials" is defined in 49 CFR 172.101. Hazardous substances are defined in 40 CFR 302.4 and the Superfund Amendments and Reauthorization Act (SARA) Title III. Hazardous materials and hazardous substances that would be transported, stored, or used at the Project in quantities greater than the Threshold Planning Quantity (TPQ) designated by SARA Title III for emergency planning are summarized in **Table 2-2**.

The primary route for transporting hazardous materials to the Project area would be via Eagle Canyon Drive. U.S. Department of Transportation (USDOT)-regulated transporters would be used for shipments. USDOT-approved containers would be used for on-site storage (Oil-Dri 1999), and spill containment structures would be provided. Hazardous materials would be stored on private land in designated areas designed with secondary containment structures to control spillage.

Quantities Less Than Reportable Quantities

Small quantities of hazardous materials that would be used in quantities less than the TPQ would also be managed at the Project area. These include auto and equipment maintenance products, office products, paint, and, batteries. These materials are not included in **Table 2-2**.

TABLE 2-2
Hazardous Materials Management
Reno Clay Plant Project

Substance	Area Used/Stored	Rate of Use (per year)	Quantity Stored On-site	Storage Method	Waste Management
Diesel Fuel	Processing Facility	262,800 gal.	5,000 gal.	Bulk tank	No waste
Hydraulic Fluid	Processing Facility	4,400 gal.	440 gal.	Drums	Recycled
#5 Burner Oil	Processing Facility	1,576,800 gal.	25,000 gal.	Bulk Tank	No Waste
Antifreeze	Processing Facility	2,200 gal.	220 gal.	Drums	Recycled
Cleaning Solvents	Processing Facility	110 gal.	10 gal.	Totes	Recycled
Propane	Processing Facility	10,950 gal.	1,000 gal.	Bulk Tank	No Waste
Oil-Based Fragrance	Processing Facility	30,000 gal.	2,000 gal.	Bulk tank	No waste
Grease	Processing Facility	20,000 gal.	2,000 gal.	Totes, drums	Recycled

Source: Oil-Dri 1999

Petroleum Products

Oil-Dri would implement spill prevention and cleanup procedures during the life of the project. Oil-Dri would control the use and unintended spillage of petroleum products through the following:

- Processing Facility and fueling vehicles would be equipped with spill response materials;
- Earth moving equipment would be available for constructing dikes spill control berms;
- Above ground tanks and associated piping would be visually inspected for leaks on a daily basis;
- Bulk storage tanks would be constructed with secondary containment to accommodate 110 percent of volume of the largest tank; and,
- Mobile or portable oil storage tanks would be isolated to prevent spilled oil from reaching surface water.

Oil-Dri personnel would be instructed in operation and maintenance of equipment to prevent discharge of oil. Spill response training would be provided through the Environmental Compliance Awareness Program outlined in Oil-Dri's Emergency Response Plan (Oil-Dri 1999). Supervisors would schedule and conduct spill prevention briefings for personnel. Known spills, malfunctioning components, and precautionary measures would also be discussed during briefings.

Hazardous Wastes

Hazardous waste generation, treatment, and disposal is regulated by the federal Resource Conservation and Recovery Act (RCRA [40 CFR §260-270]). Under RCRA, Oil-Dri would likely be considered a "conditionally exempt small quantity generator," for activities at the Project because less than 100 kilograms of hazardous waste would be generated each month.

Oil-Dri has a waste minimization program to review use of hazardous substances on the mine property. Where possible, alternative products that generate no waste or solid waste, rather than RCRA-regulated hazardous waste, would be used. Hazardous wastes generated at the Project such as cleaning solvent spray cans, and rags, would be transported to properly permitted waste disposal or recycling facilities by appropriately licensed waste haulers.

Toxic Release Inventory (TRI)

Since 1998, the mining industry has been required to comply with Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA, Public Law 99-499, Title III, Superfund Amendment and Reauthorization Act, 1986) and Section 6607 of the Pollution Prevention Act. These laws are intended to increase public awareness and access to information concerning the presence and release of toxic chemicals present in the community. The Act is often referred to as the Toxic Release Inventory (TRI) and requires that certain type facilities meet specific criteria, including those facilities with specified Standard Industrial Classification code designations, provide annual reports to state and federal (EPA) agencies regarding releases of listed toxic and hazardous chemicals to the environment.

The proposed Processing Facility falls under Standard Industrial Classification code 1459, Mining and Quarrying of Nonmetallic Minerals, Except Fuels – clay ceramic and refractory material mining. The Reno Clay Plant is excluded from the TRI program; reporting is not required and TRI calculations would not be made.

HUMAN HEALTH AND SAFETY

Human health and safety for employees at the Project would be regulated by the federal Mine Safety and Health Act of 1977 (MSHA), which sets mandatory safety and health standards for surface metal and nonmetal mines. The purpose of these health and safety standards is the protection of life, promotion of health and safety, and prevention of accidents. MSHA regulations are codified under 30 CFR Subchapter N, Part 56. Employees at the Project would be required by Oil-Dri to receive safety training.

EMPLOYMENT

The Project would employ approximately 100 people. The work schedule would include two 12-hour shifts each comprised of approximately 45 persons. Shift changes would occur at 6:00 a.m. and 6:00 p.m. Management staff would consist of approximately 10 individuals. Most of the work force for the Project would come from the existing labor pool in the Reno-Sparks area. The temporary work force to construct the Processing Facility for the Project would be approximately 75 people. Construction and development are expected to require approximately 12 months to complete.

RECLAMATION

Reclamation activities on public land for the proposed Project would be designed to achieve post-mining land uses consistent with the Lahontan Resource Management Plan (BLM 1985). Reclamation is intended to return disturbed land to a level of productivity comparable to pre-mining levels. Post-mining land use includes wildlife habitat, livestock grazing, dispersed recreation, mineral exploration, and development. Reclamation on private land would comply with requirements of Washoe County and NDEP.

Short-term reclamation goals would be to stabilize disturbed areas and protect adjacent undisturbed areas from unnecessary or undue degradation. Long-term reclamation goals would ensure public safety, stabilize the sites, and establish productive vegetative communities consistent with post-mining land use. To ensure public safety and to protect seeded areas from disturbance, a fence would be constructed around active mine areas and revegetated areas not released from bonding. The fence would consist of steel t-posts every 15 feet with three strands of smooth wire. Reflectors and flags would mark the fence every 15 feet. Warning signs would be attached to the fence every 50 feet. The fence would be dismantled once revegetated areas are released from bonding by BLM and NDEP.

Reclamation activities on private land would include removal of the mill, dryer, and crushing facility. The water supply system, warehouse, administrative offices, parking lot, and roads would remain for use as a commercial facility. Crushing and stockpile areas would be regraded, covered with approximately one-foot of growth media, and seeded. The reclamation schedule would encompass the period between cessation of mining through revegetation (approximately three years).

Backfill Mine Panels

Reclamation would take place concurrently with operations where possible. As sequential mine panels are developed, overburden from active panels would be used to backfill mined-out panels. Overburden placed in stockpiles and berms would also be used as backfill to attain post-reclamation topography. The proposed post-reclamation topography, and cross sections through selected portions of the North and South Mine Areas is shown in **Figure 2-5.**

In addition, approximately 60,000 tons of off-specification (off-spec) material from the Processing Facility would be used annually as backfill in the South Mine Area and up to 7,000 tons (or about 10%) in the North Mine Area. As off-spec material is generated by the Processing Facility, it would be hauled to the North or South Mine area using covered 20-ton belly dump trucks and mixed with overburden during the backfill sequence. Typical post-reclamation contours of the North and South Mine areas are shown in **Figure 2-6.**

Grading Disturbed Areas

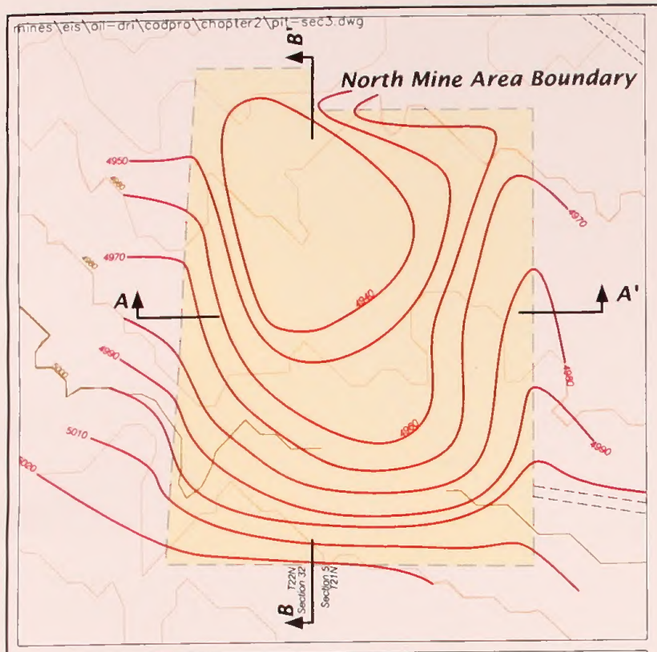
Prior to placing growth media, disturbed areas would be graded to attain slope configurations shown in **Figure 2-6**. The regraded surface would be ripped where necessary prior to placement of growth media. Ripping would reduce compaction, provide a uniform seed bed, and help establish contact between the seed and soil.

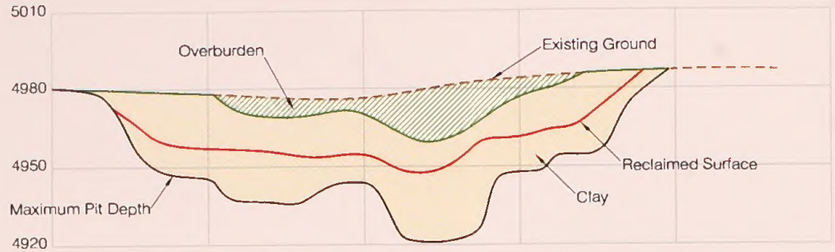
Soil Salvage and Redistribution

As the mine areas, access roads, and stockpile areas are developed, Oil-Dri would salvage approximately one-foot of growth media for future use in reclaiming disturbed areas. After placement of growth media on disturbed areas, Oil-Dri would collect soil samples for analysis to determine agronomic characteristics necessary to sustain the desired plant communities on reclaimed areas. Based on this analysis, and in consultation with BLM and NDEP, soil amendments would be added to the growth media prior to seeding.

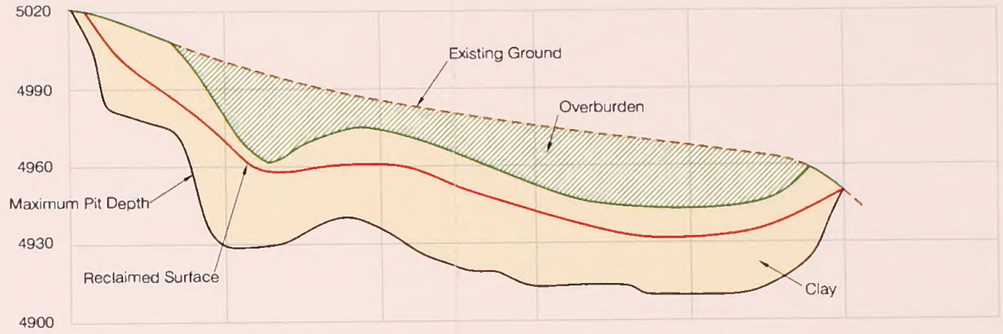
Revegetation

Oil-Dri's goals for revegetation programs are to stabilize reclaimed areas, ensure public safety, and establish a productive vegetative community based on the applicable land use plan and designated post-mining land use. **Table 2-3** is the proposed seed list for reclamation in the Project area. The actual seed mix to be used during reclamation would be selected from the species listed in **Table 2-3** and, depending on availability, would be applied using a seed drill at a rate of approximately 15 pounds pure live seed (PLS) per acre. Modifications in the seed list, application rates, and cultivation methods and techniques could occur based on monitoring of concurrent reclamation. Changes and/or adjustments to seed mixtures and application rates would be developed through consultation with, and approval by BLM and NDEP. The seed mix selected would represent a Reclaimed Desired Plant Community and the mix would be appropriate for each ecological site description in the study area.

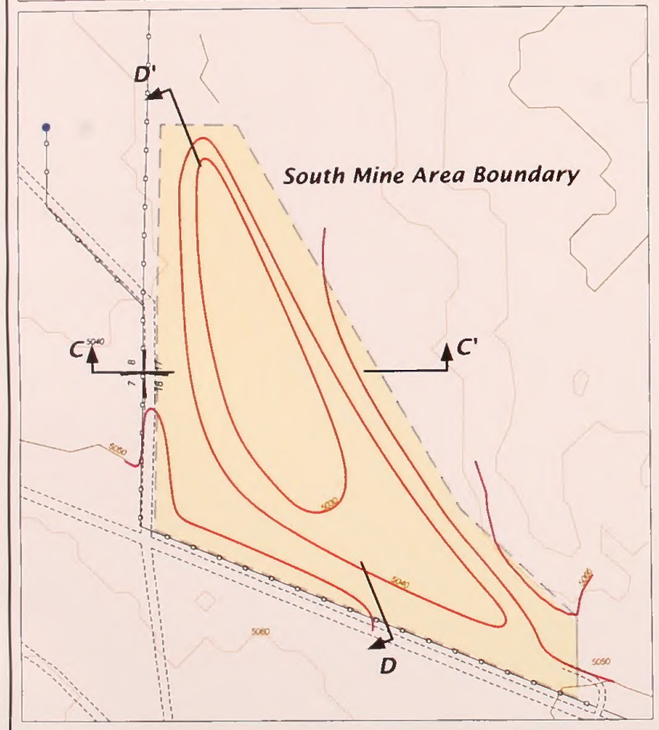


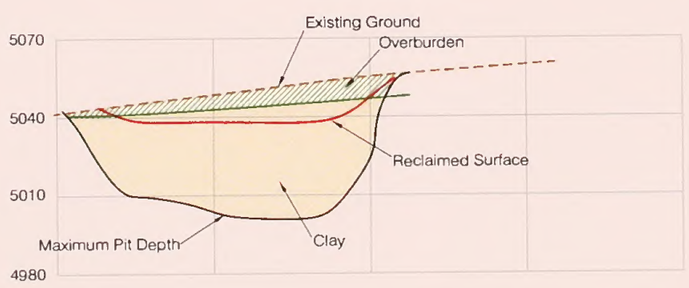


North Mine Area - Section A-A'

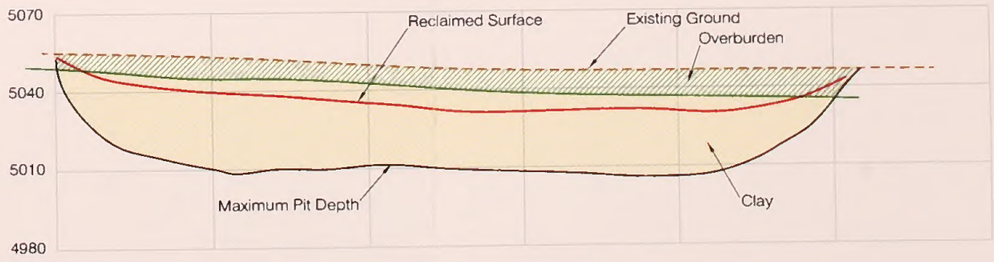


North Mine Area - Section B-B'





South Mine Area - Section C-C'



South Mine Area - Section D-D'

Source: Oil-Dri, 2001

April 2001

0 Feet 1000
Horizontal Scale
Vertical Scale: 1"=60'

Reclaimed Surface Contour
Mine Pit Boundary
Road
Powerline

Post Reclamation Topography and Cross Sections
Reno Clay Plant Project
Reno, Nevada
FIGURE 2-5

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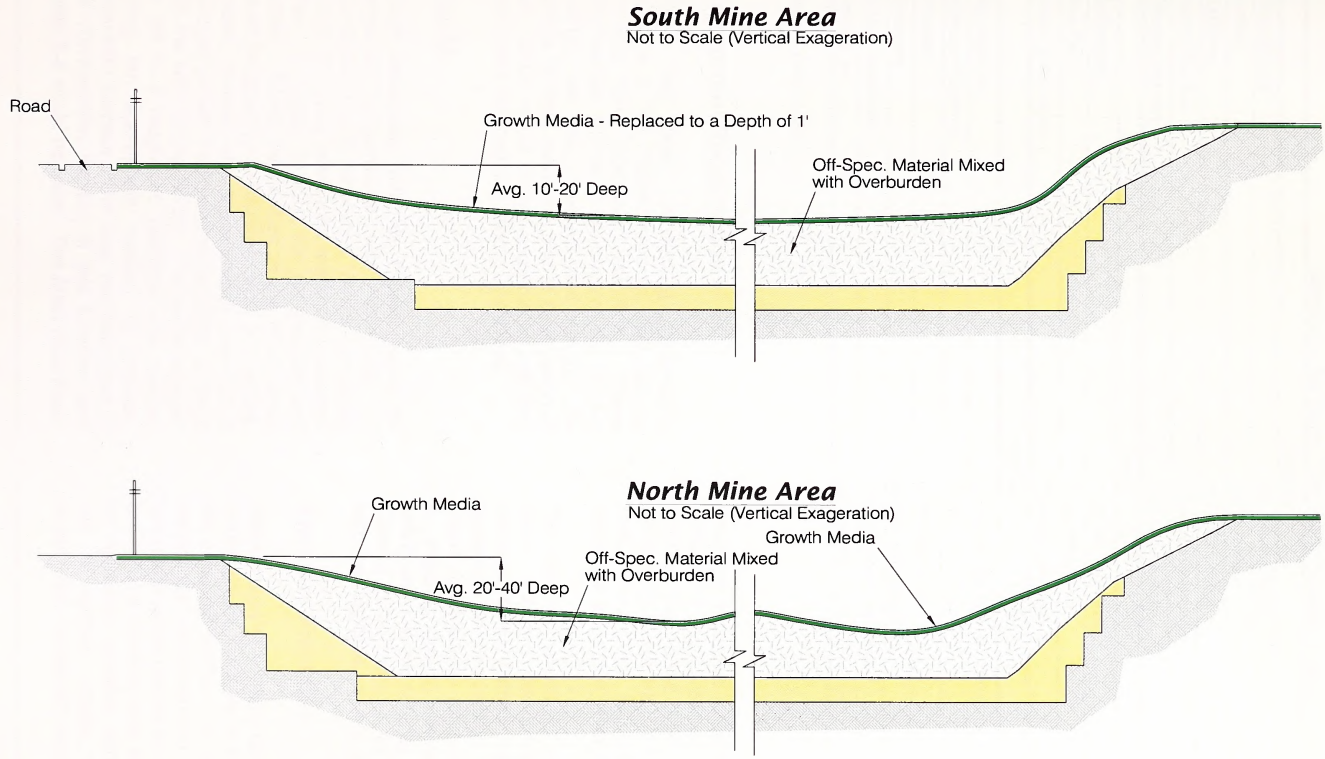


March 2001

Growth Media

Overburden

Off-Spec. Material Mixed with Overburden

Schematic of Reclaimed Mine Pit Cross-Section
Reno Clay Plant Project
Reno, Nevada
FIGURE 2-6

TABLE 2-3
Seed List for Reno Clay Plant Project Area

Grasses	
Blue gramma	*Boutelova gracilis*
Galleta	*Hilaria jamesii*
Saltgrass	*Distichlis stricata*
Indian ricegrass	*Ioryzopsis hymenoides*
Webber ricegrass	*Oryzopsis webberi*
Forbs	
Buckwheat	*Erigonum heraceloides*
Blue flax	*Linum lewisii*
Desert globemallow	*Sphaeralcea ambigua*
Shrubs	
Big sagebrush	*Artemisia tridentata var. tridentata, wyomingensis*
Antelope bitterbrush	*Purshia tridentata*
Winterfat	*Ceratiodes lanata*
Shadscale	*Atriplex confertifolia*
Rubber rabbitbrush	*Chrysothamnus nauseosus*
Mormon tea	*Ephedra (nevadaensis) (viridis)*

Source: Oil-Dri 1999.

Concurrent Reclamation

Oil-Dri has been conducting reclamation activities at the Project area for disturbances resulting from exploration activities. These disturbances include cross-country tire tracks, cuttings, test pits, trenches, and sumps. As various facilities reach the end of their period of use, Oil-Dri would initiate reclamation activities concurrent with ongoing mining operations.

Roads

Roads associated with the Project would be reclaimed concurrently with cessation of operations in each mine area. Roads remaining at end of mining operations would be reclaimed when no longer needed for reclamation and access. Roads established in the mine areas would be ripped to a minimum depth of one foot, graded, covered with approximately one-foot of salvaged growth media and recontoured to blend with the surrounding terrain. The surface would be left in a roughened condition and seeded during the appropriate season to promote vegetation success. The seed mix described in the *Revegetation* section of this Chapter and **Table 2-4** would be used. The Main Haul Road would be reclaimed in the following manner: the portion of haul road constructed from the existing road to the North Mine Area would be completely reclaimed; other portions of the haul road, which use existing roads, would be reclaimed to original, premining widths.

Disturbances associated with continuing exploration activities including cross-country tire tracks, cuttings, sumps, and trenches would be reclaimed in conjunction with ongoing operations. Mine access roads would be constructed by stripping growth media and using it as a safety berm at the edge of the exploration road. Material in the berm would be redistributed back onto the regraded surface during reclamation.

Ancillary Facilities

Reclamation of ancillary facilities on private land would include, removal of the mill, the dryer and the crushing facility. The water supply system, warehouse, administrative offices, parking lot, and roads would remain for use as a commercial facility. The crushing and stockpile areas would be regraded, covered with approximately one foot of growth media, and seeded. The reclamation schedule would encompass the

period between cessation of mining through revegetation (approximately three years).

Non-salvageable material including scrap building materials and equipment would be disposed of offsite at an approved landfill in accordance with Washoe County requirements. Post-mining land use would be light industrial/ warehouse.

Monitoring/Evaluation of Reclamation Success

BLM and NDEP would evaluate status of vegetative growth after three full growing seasons following seeding. Final bond release may be considered at that time. Interim progress of reclamation at the Project area would be monitored as requested by the agencies.

ENVIRONMENTAL PROTECTION MEASURES

This section contains descriptions of mitigation and monitoring measures that are included in Oil-Dri's Plan of Operations for the Reno Clay Plant Project. These measures apply to the Proposed Action and all action Alternatives.

Mining and Reclamation

- All surface disturbance would be reclaimed in accordance with applicable federal, state, and local regulations.
- Approximately one foot of growth media would be salvaged from proposed disturbance areas and placed in life-of-mine stockpiles for future reclamation uses or direct hauled to regraded areas and placed in preparation of final surface reclamation.
- Overburden would be used to backfill mined-out areas or placed in life-of-mine stockpiles, regraded and contoured to attain post-reclamation topography. Regraded areas would be ripped and scarified to reduce soil compaction. Salvaged growth media would be placed to a minimum depth of approximately one foot over regraded areas, finish graded, fertilized, and seeded.
- Life-of-mine stockpiles of growth media and overburden would be graded to attain a minimum slope of 3.0H:1.0V and seeded with a BLM approved seed mix. The stockpiles would be fenced to protect seeded areas from disturbance.
- After placement of growth media on disturbed areas, Oil-Dri would collect soil samples for analysis to determine agronomic characteristics necessary to sustain the desired plant community on reclaimed areas. Based on this analysis, and in conjunction with BLM and NDEP, soil amendments would be added to the growth media prior to seeding.
- Off-specification material produced during ore processing would be used to augment backfill in the North and South Mine areas.
- Newly seeded areas would be protected from livestock grazing for a minimum of three growing seasons or until released from bond by BLM. A weed monitoring and control plan would be developed to ensure that reclaimed areas are protected from noxious weed invasion.
- At closure, ancillary mine facilities including the mill, dryer, and crushing facility would be removed. The water supply system, warehouse, administrative offices, and parking lot would remain for use as a commercial facility.
- Roads no longer needed for reclamation and access in the mine areas would be ripped to a minimum depth of one foot, graded, covered with approximately one-foot of salvaged growth media and recontoured to blend with the surrounding terrain. The surface would be left in a roughened condition and seeded during the first appropriate season to promote vegetation success. The Main Haul Road would not be reclaimed after closure of the mine area but would be graded to maintain proper drainage and control erosion.
- Disturbances associated with continuing exploration activities including roads, cross-country tire tracks, cuttings, sumps, and trenches would be reclaimed in conjunction with on-going operations. Mine access roads would be constructed by stripping growth media and using it as a safety berm at the edge of the exploration road. Material in the

berm would be redistributed back onto the regraded surface during reclamation.

Water Resources

- Oil-Dri would monitor water wells located within 0.5 miles of the Project's production wells. Oil-Dri would measure water table levels of residential wells on a monthly basis provided owners allow access to the respective wells.

Sediment Control

- Run-on berms would be constructed around active mine panels to prevent surface water from entering work areas. Stormwater retention ponds would be constructed as necessary throughout the project area to collect, settle, infiltrate, and evaporate run-on/run-off water from areas disturbed by mining operations.

- Stormwater would be controlled using Best Management Practice (BMPs) as defined by the Nevada State Conservation Commission (1994) and would include material handling procedures that minimize exposure of materials to stormwater; spill prevention and response measures; sediment and erosion control; and physical stormwater controls. Stormwater run-on would be controlled by installing interceptor ditches around surface facilities.

- Small check dams, hay bale dams, or filter fences, would be placed around stockpiles as temporary erosion control measures until vegetation is established to provide stable slope conditions.

Spill Prevention and Containment

- Oil-Dri has developed a plan to mitigate potential impacts resulting from spillage of petroleum products in the Project area. The Processing Facility and fueling vehicles would be equipped with spill response materials. Earth moving equipment would be available from the mining operation for constructing emergency dikes. Above ground tanks and associated piping would be visually inspected for leaks on a daily basis. Bulk storage tanks would be constructed with secondary containment to accommodate 110 percent of volume of the largest tank.

- In the event of a spill, the following actions would be taken:

  - The source of the spill would be immediately controlled and the shift foreman notified;

  - The shift foreman would investigate the spill, take appropriate action to stop the discharge at the source and contain the spill, report conditions to the mill superintendent or other designated company official who would notify the appropriate agencies of a reportable spill;

  - The facility would be repaired and returned to operation as soon as possible;

  - Contaminated material would be analyzed to determine the level of contamination, excavated, and disposed of in accordance with state and federal regulations;

  - The area would be contoured and reclaimed; and

  - Remediation of a reportable spill would be reviewed for approval prior to and upon completion by all appropriate agencies.

Noise

- All major equipment used in the Processing Facility would be located inside insulated buildings to reduce noise. Outside equipment would be equipped with backup alarms for use during daylight hours and backup strobe lights during non-daylight hours to minimize or eliminate noise at night.

Paleontology

- If rare plant fossils, invertebrate or vertebrate fossils were discovered during mine development and operation, Oil-Dri would contact BLM to determine necessary steps for identification, recovery, and preservation.

Air Quality

- Fugitive dust generated from surface activities would be controlled using BMPs. Water would be obtained from Oil-Dri's existing well for use in controlling dust. Implementation of BMPs would reduce cumulative effects of fugitive dust emissions in the Project area. Emissions from material processing and drying would be controlled by baghouses. Gaseous emissions would be minimized through proper operation and maintenance of equipment.

- Oil-Dri would limit sulfur dioxide emissions by purchasing fuel that meets regulatory standards.

Land Use

- Relocation of the Hungry Valley fence, intersecting the North Mine Area, would also occur and would be coordinated with BLM authorities.

Wildlife

- Oil-Dri would comply with the Migratory Bird Treaty Act by not conducting stripping operations during the breeding season (3/15-7/16) of ground nesting migratory birds using the area. If stripping is proposed during the breeding season, nest surveys would be conducted prior to disturbance and buffer zones would be used to protect identified nests.

Cultural Resources

- Two areas proposed for disturbance under the Proposed Action have not been previously surveyed for cultural resources. These areas include the proposed Processing Facility powerline right-of-way and the new road construction connecting Hungry Valley Road to Eagle Canyon Drive. Prior to disturbance, these areas will be surveyed in accordance with BLM and SHPO requirements.

- Section 106, which includes data recovery, would be completed prior to authorization to commence activities in these areas.

  - If cultural resources are discovered inadvertently during project construction and/or operation, the following mitigation measures would apply:

    - Oil-Dri would immediately report (any inadvertent discovery) to BLM by telephone, followed by written confirmation. Oil-Dri would suspend all operations in the immediate vicinity of such discovery and protect it until an evaluation has been completed by BLM.

  - Any data recovery plan developed in support of the Proposed Action or Alternative would include a section that states how BLM and Oil-Dri would administer discovery situations.

  - Provisions would be made whereby Native American monitors are afforded the opportunity to be present during the field phase of archaeological data recovery activities.

- In the event that Native American human remains, funerary objects, or objects of cultural patrimony are discovered, the following mitigation measures would apply:

  - Oil-Dri would immediately stop all operations in the immediate vicinity of any such discovery and protect the discovered resource for 30 days or until given notice to proceed by BLM. Oil-Dri would be responsible for the cost of any consultation, evaluation, and/or mitigation that occurs due to the discovery. Any decision by BLM regarding treatment and/or mitigation would be made after consulting with appropriate Native American tribes under the provisions of 43 CFR 10.4, 10.5, and 10.6.

- BLM and Oil-Dri would ensure burial sites, human remains, funerary objects, sacred objects, and objects of cultural patrimony encountered over the term of the Proposed Action were treated with respect due such evidence and in accordance with federal law and, to the extent not inconsistent with federal, state, and local ordinances.

- Indirect impacts to National Register eligible properties could occur as a result of casual land use by mine employees and by

members of the public using roads improved as part of the Project. To address this potential impact, the following mitigation measure would apply:

- As a part of new hire and refresher training programs, Oil-Dri would ensure that all of its personnel, and all the personnel of its contractors, are directed not to engage in the illegal collection of historic or prehistoric artifacts. Oil-Dri would cooperate with BLM to ensure compliance with the Archaeological Resources Protection Act and any other federal laws that apply.

➢ Surface disturbance has the potential to remove or disrupt native plant populations. To address this impact, the following mitigation measure would apply.

- The BLM would ensure native plant species are integrated into any reclamation test plot programs implemented in the Project area and, depending upon the monitored success, that native species would be included in the seed mix used to reclaim appropriate portions of the mine site.

PROJECT ALTERNATIVES

This section describes alternatives to the Proposed Action including the No Action Alternative, Alternatives Considered but Eliminated from Detailed Analysis, and the Agency Preferred Alternative. Alternatives selected by BLM for consideration in this EIS are based on potential impacts or issues associated with the Proposed Action, including those identified by the public during the scoping process. BLM is required to analyze environmental effects resulting from the Proposed Action and to identify reasonable alternatives that would mitigate or eliminate potential impacts from the Proposed Action. BLM is also required to analyze the No Action Alternative and describe the environmental consequences that would result if the Proposed Action is not implemented.

Major components of the proposed mine development, respective functions, and potential environmental effects resulting from implementation of these activities are considered in development of alternatives. Impacts that cannot be mitigated may require one or more alternatives. Other alternatives were considered early in the review process. These alternatives were eliminated because they were either not technically or economically feasible, or provided no environmental advantage over the Proposed Action.

FEATURES COMMON TO PROPOSED ACTION AND ALTERNATIVES

The following components of Oil-Dri's proposed Plan of Operations for the Project are common to the Proposed Action and Alternatives A and B:

➢ Mining the Project clay mineral deposit;

➢ Constructing and operating processing facilities;

➢ Constructing ancillary facilities, including the office complex, perimeter fence, equipment maintenance facility, growth media stockpiles, septic field, water distribution facility, and fueling station;

➢ Implementation of dust control measures;

➢ Continuing geologic evaluations; and

➢ Implementation of reclamation activities, including backfill and regrading of mine panels or cuts, removal of structures after cessation of operations, regrading of disturbed areas (including roads) drainage control, well abandonment, removal and regrading of stockpile areas, replacement of salvaged growth media, revegetation, and reclamation monitoring.

ALTERNATIVES CONSIDERED IN DETAIL

Three alternatives to the Proposed Action are evaluated in this section of the EIS: Alternative A – Chickadee Drive Access Route; Alternative B – South Access Route; and the No Action Alternative. The proposed access route and alternatives are shown in **Figure 2-7.** Mitigation measures that would further reduce or minimize impacts of the Proposed Action are described in Chapter 4.

Alternative A - Chickadee Drive Access Route

Issue: The Proposed Action would use Eagle Canyon Drive and Hungry Valley Road as primary access to the Project area. This route would result in mine related traffic mixing with residential and other commercial traffic using Eagle Canyon Drive. Increased traffic along this route has been identified as a concern by many commentors during public scoping for the EIS.

Alternative A: This alternative incorporates all components of the Proposed Action but would require use of Chickadee Drive and Hungry Valley Road as the primary access to the Project area. **Figure 2-7** shows the specific route included in this alternative. Use of Chickadee Drive as the primary access route would reduce traffic load on Eagle Canyon Drive and would increase traffic load to the west along Chickadee Drive.

Under Alternative A, Oil-Dri would not construct a 0.8 mile east access road connecting Eagle Canyon Drive with Hungry Valley Road.

Oil-Dri would upgrade approximately 1.25 miles of Chickadee Drive from the intersection of Lemmon Drive to the beginning of Hungry Valley Road. This portion of Chickadee Drive would be reconstructed including removal and replacement of existing asphalt in accordance with Washoe County requirements. This section of reconstructed road would be landscaped to reduce noise and visual impacts.

Approximately 1.25 miles of the Hungry Valley Road from the intersection at the Main Haul Road to the beginning of Chickadee Drive would be widened from a current 20-foot width to 35-feet and upgraded including: excavation and removal of unsuitable materials, placement and compaction of crushed aggregate base course material, and surface treated to control dust. Construction and reconstruction associated with improvements to the Chickadee Drive Access Route are estimated to cost approximately $917,221.00 in 2000 dollars.

Alternative B - South Access Route

Issue: The issue associated with Alternative B is the same as Alternative A.

Alternative B: This alternative incorporates all components of the Proposed Action but would require use of a southern route as primary access to the Project area. **Figure 2-7** shows the specific route included in this alternative. The South Access Route is from U.S. Highway 395, which exits at Golden Valley Road and heads east. At Estates Drive the route heads north and the surface becomes dirt. The road continues north and east approximately 3.9 miles to the Processing Facility and connection to the Main Haul Road. The section from Estates Drive to the Processing Facility (approximately 3.9 miles) would be widened from a current 20-foot width to 35 feet and surfaced with crushed aggregate base course material and surface treated to control dust. Use of the South Access Route as the primary access route would reduce traffic load on Eagle Canyon Drive and would increase traffic load to the south along Estates Drive and Golden Valley Road. Construction and reconstruction associated with improvements to the South Access Route are estimated to cost approximately $1,326,875.00 in 2000 dollars.

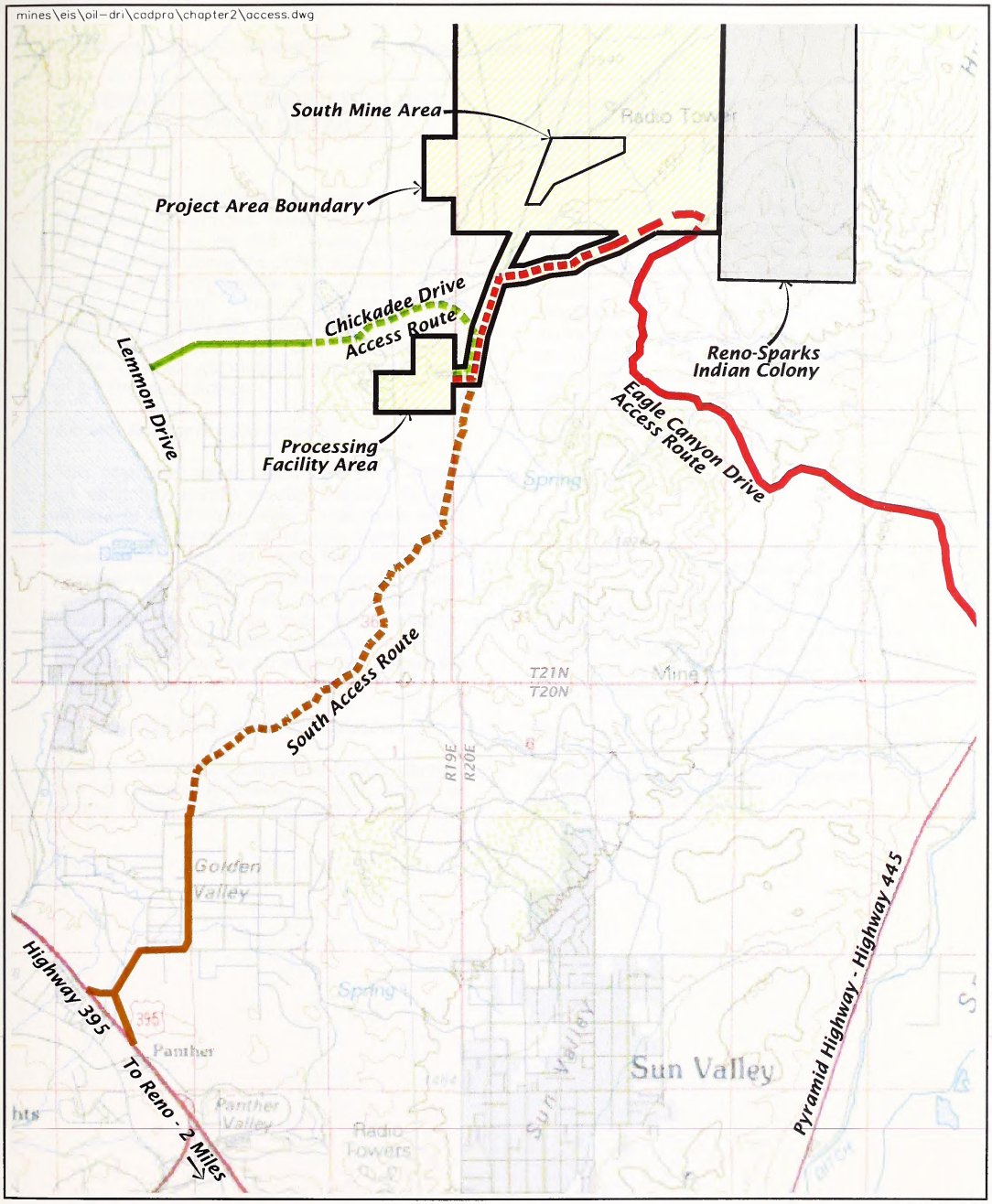
Under Alternative B, Oil-Dri would not construct a 0.8 mile east access road connecting Eagle Canyon Drive with Hungry Valley Road.

No Action Alternative

Under the No Action Alternative, the Proposed Action would not be approved. Oil-Dri would not be authorized to develop the defined mineral reserves located on public land. Potential impacts predicted to result from development of the Project would not be realized.

Agency Preferred Alternative

The Agency Preferred Alternative is Alternative A – Chickadee Drive Access Route.



Access Routes
Reno Clay Plant Project
Reno, Nevada
FIGURE 2-7

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

This section describes alternatives to the Proposed Action that were eliminated from further review in the EIS. These alternatives were identified during the public scoping process or by BLM during review and analysis of the Proposed Action. These alternatives were considered technically infeasible, provided no environmental advantage over the Proposed Action, or would not meet the purpose and need of the Proposed Action.

Access Across Private Property

This alternative would require Oil-Dri to secure an easement across private property to gain access to the Project area. This route would begin at the junction of Hungry Valley Road access route and the Main Haul Road and continue in a westerly direction approximately one-half mile north of, and parallel with Chickadee Drive. This route was eliminated from further consideration because Oil-Dri has been unable to secure an easement across the private property.

Develop Clay Mine at Another Location

Several commentors suggested Oil-Dri develop their clay mine at a different location; outside of Hungry Valley. The commentors noted that development of clay deposits in more remote locations would avoid the potential impacts posed by development of the Hungry Valley deposit.

Under the General Mining Law of 1872, a mining claimant is allowed to locate and establish mining claims subject to regulations under 30 USC 22, 26, and 28. Section 302(b) of the Federal Land Policy and Management Act recognizes the entry and development rights of mining claimants while directing the Secretary of the Interior to "...by regulation or otherwise, take any action necessary to prevent unnecessary or undue degradation of the land." Oil-Dri must comply with BLM Surface Management Regulations for Locatable Mineral Operations (43 CFR 3809) in order to develop the clay deposit in Hungry Valley.

While other clay deposits may exist at other locations, Oil-Dri has established the requisite claim to the clay deposit in Hungry Valley. As such, BLM's authority under 43 CFR 3809 regulations is not to decide if mining should be allowed but to regulate how activities already authorized by the General Mining Law of 1872 are to be conducted.

Although eliminated from further consideration in this EIS, analysis of this alternative is considered to be similar to the No Action Alternative for this Project in Hungry Valley.

CHAPTER 3

AFFECTED ENVIRONMENT FOR PROPOSED ACTION AND ALTERNATIVES

INTRODUCTION

The Project area is located in the Hungry Valley approximately 10 miles north of the Reno/Sparks metro area in Washoe County, Nevada (**Figure 1-1**). The valley floor lies at approximately 4,900 feet above mean sea level (AMSL) and is bounded on the east and west with ridges ranging up to 6000 feet AMSL. The majority of Hungry Valley, including the proposed Project area, is public land administered by BLM. Oil-Dri holds mining claims on approximately 5,827 acres in Hungry Valley. The Reno-Sparks Indian Colony adjoins the Project area on the east. Low to medium density suburban development exists ranging from two to four miles to the southeast, south, and west. The area north of the Project is mostly uninhabited public land.

Figure 3-1 shows the general study area for most environmental resource investigations. The study area boundaries for air resources, social and economic resources, recreation and wilderness, and access and land use, extend beyond the boundaries depicted in **Figure 3-1** and are described in the respective resource discussions below. Study areas for each environmental resource are based on the predicted locations of direct and indirect impacts from the Proposed Action and Alternatives.

Appendix 5 of BLM NEPA Handbook (H-1740-1) identifies Critical Elements of the Human Environment. The appendix is a list of elements of the human environment that are subject to requirements specified in statutes or executive orders and must be considered in all BLM environmental documents. The Critical Elements are:

- Air Quality
- Areas of Critical Environmental Concern (ACEC)
- Cultural Resources
- Environmental Justice
- Farm Land (prime or unique)
- Floodplains
- Invasive, Non-native Species
- Native American Religious Concerns
- Paleontology
- Threatened, Endangered, Candidate, and Special Status Species
- Migratory Birds
- Wastes (hazardous or solid)
- Water Quality (drinking water/groundwater)
- Wetlands/Riparian Zones
- Wild and Scenic River
- Wilderness

The following Critical Elements of the Human Environment have been analyzed by BLM and would not be affected by the Proposed Action or alternatives or are not present in the proposed Project area:

- Areas of Critical Environmental Concern
- Floodplains
- Wild and Scenic Rivers
- Wilderness
- Farm Land (prime or unique)

This chapter provides a summary of environmental baseline information. In the following sections, "Project area" and "study area" refer to the Proposed Action and land surrounding the proposed mine project. The "area of potential effect" as used in the *Cultural Resources* section is synonymous with the Project area.

GEOLOGY, MINERALS AND PALEONTOLOGY

The Project area is located within the Basin and Range Physiographic Province, a region that extends over most of Nevada and parts of adjoining states. Range-front faulting in the province has created north-south trending fault-block mountain ranges separated by broad valleys filled with alluvium.

Rocks underlying Hungry Valley proper consist of a variable interbedded sequence of Pliocene and Pleistocene fluvial-lacustrine sedimentary rocks that unconformably overlie or are in fault contact with underlying Cretaceous intrusive rocks. The lower lacustrine unit of these deposits contains the clay deposits proposed for mining. Unconsolidated Quaternary alluvial deposits, talus, slope wash, and alluvial fan deposits overlie the fluvial-lacustrine sedimentary rocks **(Figures 3-2 and 3-3).**

Two geologic units underlie the area in the vicinity of the North and South Mine areas including the Pliocene fluvial-lacustrine sedimentary rocks and Quaternary deposits. The Pliocene fluvial-lacustrine sedimentary rocks were deposited in a recent sedimentary basin between 3 and 7.5 million years before present (Papke 1999). Although these units have been eroded and highly dissected within the Project area, an overlying unconsolidated pebble-bearing sand or gravel-bearing lag deposit masks them. These sedimentary rocks are, therefore, poorly exposed within the Project area in rare outcrops (mostly in the northern part of the Project area) that consist of low mounds of small chips of hardened clay, that are generally less than one inch in diameter. The fluvial-lacustrine sediments are best described from exploration trenches and bore hole samples collected from the Project area (EMA 2000a).

The lacustrine portions of the interbedded unit consist of gray and pale-green thinly bedded and laminated (locally varved) clay material. The clay deposits are likely of fresh water lacustrine depositional origin as evidenced by bedding and lamination characteristics and the presence of diatoms (e.g., *Cymbella*, a common fresh water diatom that has persisted from about 30 million years ago to the present). This genus of diatom flourishes under restricted conditions that include an abundance of dissolved silica, and nutrients and moderately clear water (Papke 1999).

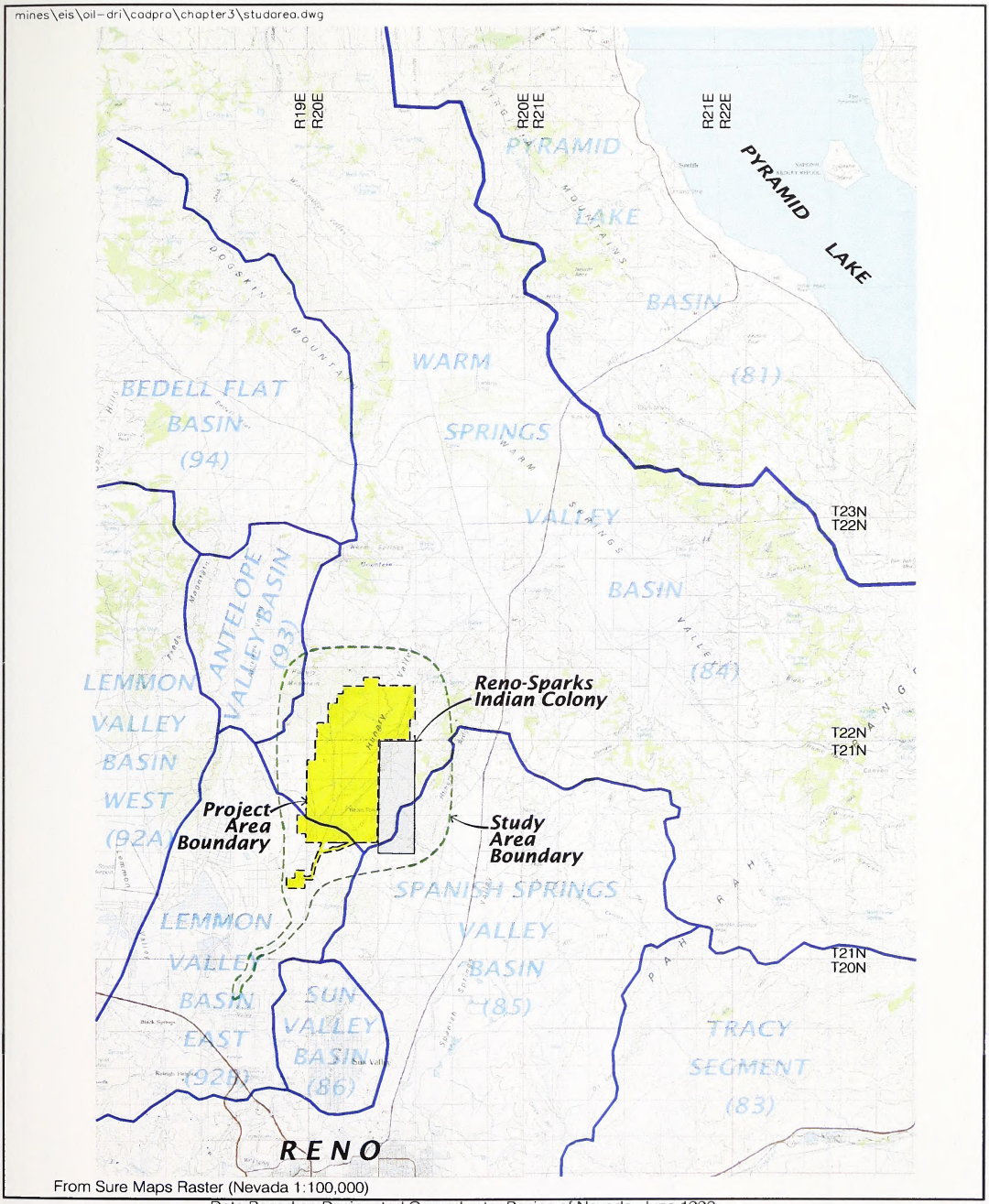
The deposit of clay-rich sediment proposed for mining in the North and South Mine areas measures up to 98 feet thick. The thickness of the deposit is variable throughout the area due to effects of faulting and post-depositional erosion. The deposit is aerially extensive and lies very close to the surface. Only a thin veneer of alluvium (0-28 feet thick) overlies the deposit (EMA 2000a).

CLAY MINERALOGY AND GEOCHEMISTRY

Mineralogically, the clay deposit consists of 65-70 percent montmorillonite clay, 10-15 percent unaltered feldspar, and 10-15 percent quartz. Iron oxide staining is rare and local in occurrence. H. H. Murray conducted clay mineralogy studies of the Oil-Dri deposit at the Clay Mineralogy Laboratory at Indiana University. Both x-ray diffraction and scanning electron microscope studies were conducted. The major clay mineral present is a calcium montmorillonite, an alumina-rich, dioctahedral member of the smectite group (Murray 1999).

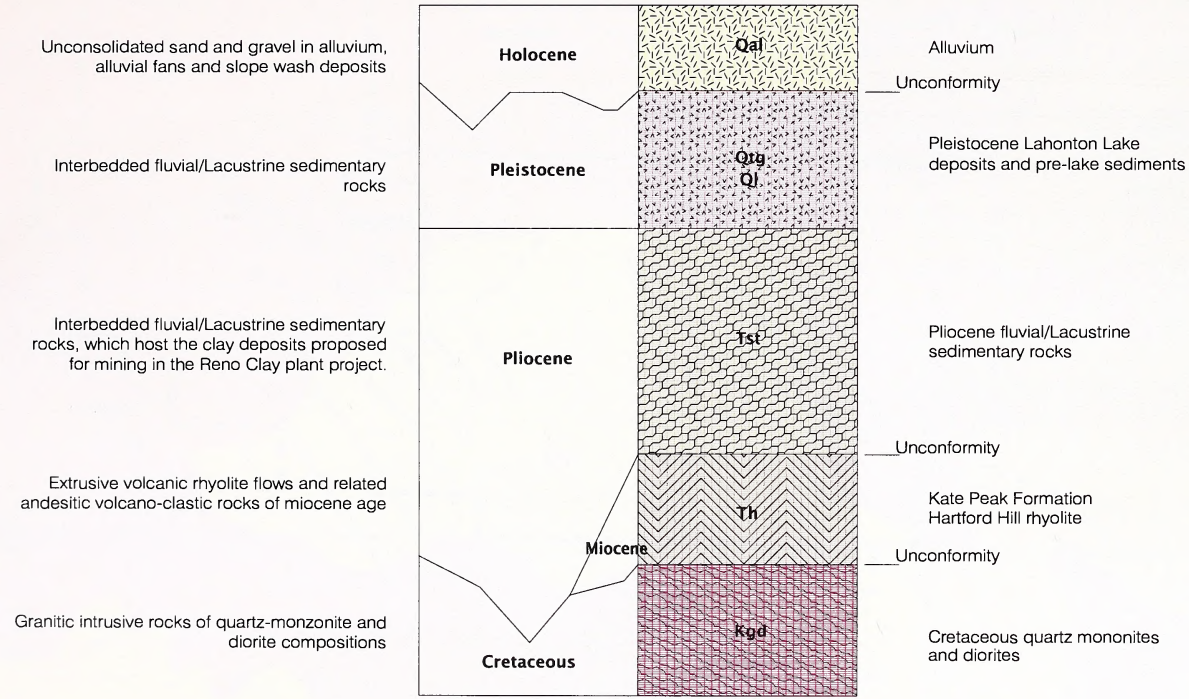
Quartz in the respirable-size fraction was estimated to be less than 0.5 percent and fibrous minerals were not observed in the scanning electron microscope studies. Based on the 11 samples studied, Murray judged the material to be quite uniform, both laterally and vertically in the South Mine Area and somewhat less so in the North Mine Area (Murray 1999).

Table 3-1 shows results of two bore hole samples collected from each mine area in the Project area and analyzed for several trace metals and major elements by Inductively Coupled Plasma Emission Spectroscopy.



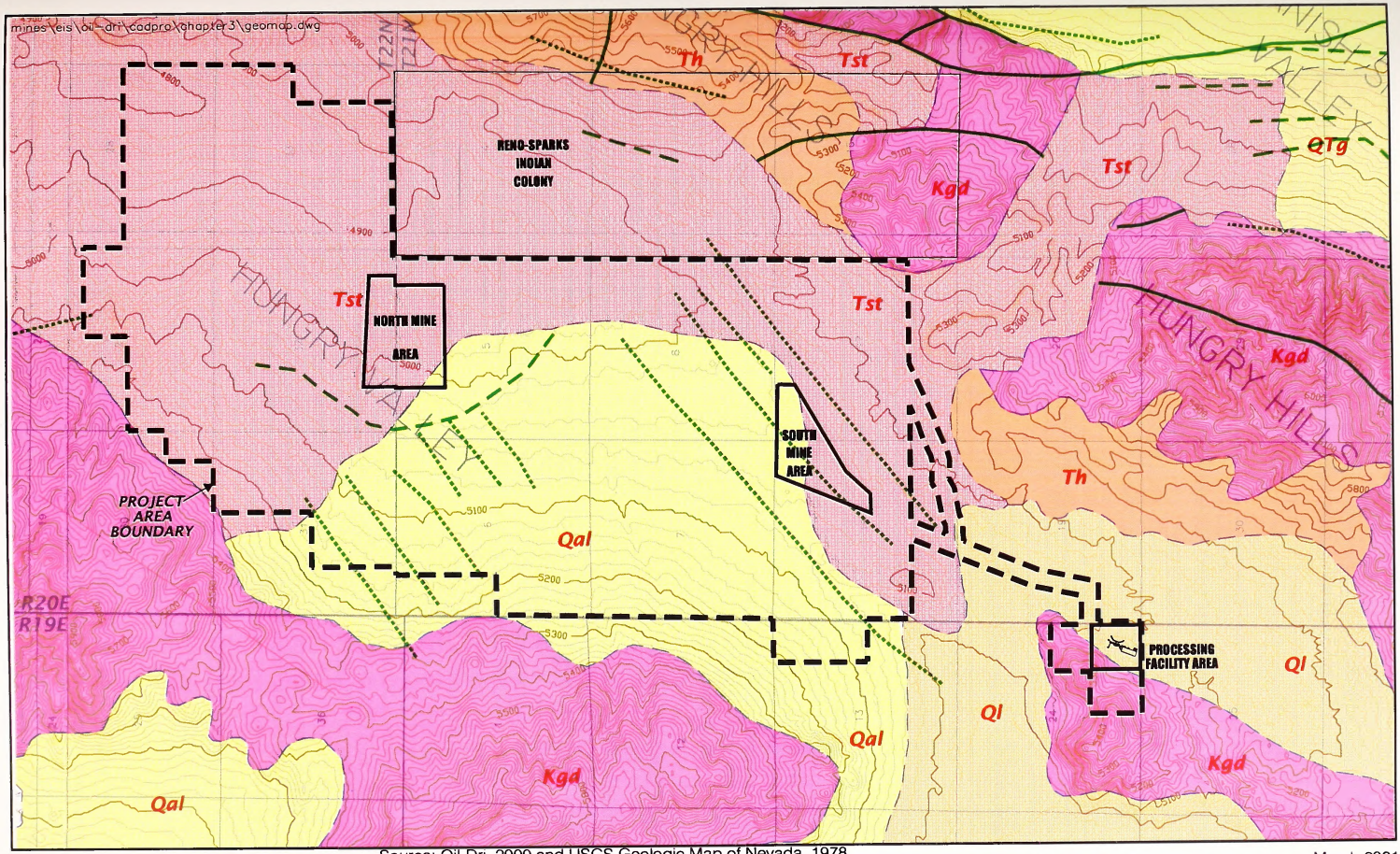
General Study Area
Reno Clay Plant Project
Reno, Nevada
FIGURE 3-1

mines\eis\oil-dri\cadpro\chapter3\stratgrf.dwg



March 2001

General Stratigraphic Section
Reno Clay Plant Project
Reno, Nevada
FIGURE 3-2



Source: Oil-Dri, 2000 and USGS Geologic Map of Nevada, 1978

March 2001

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0 Feet 4000

- Qal — Quaternary Stream Deposits, talus, slope wash, alluvial fan and eolian deposits
- QTg — Pleistocene Pre-Lake Lahontan Deposits
- Ql — Pleistocene Lake Deposits
- Tst — Pliocene Fluvial/Lacustrine Sedimentary Rocks
- Th — Miocene Hartford Hill Rhyolite
- Kgd — Cretaceous Undifferentiated Plutonic Rocks
- Pleistocene Faults
- Quaternary Lineaments
- Faults
- Geologic Contact

Geologic Map
Reno Clay Plant Project
Reno, Nevada
FIGURE 3-3

TABLE 3-1
Analytical Results of Clay Material for Trace Metals and Major Elements
Reno Clay Plant Project

Parameter	Hole # 2871-15-21	Hole #2869 – 15-19
Arsenic, As	1.0 µg/g	0.5 µg/g
Cadmium, Cd	1.1 µg/g	1.1 µg/g
Chromium, Cr	0.4 µg/g	1.4 µg/g
Lead, Pb	3.0 µg/g	3.5 µg/g
Mercury, Hg	0.14 µg/g	0.09 µg/g
Calcium, Ca	1.50 %	0.61 %
Magnesium, Mg	2890 µg/g	3140 µg/g
Potassium, K	3550 µg/g	4060 µg/g
Sodium, Na	1160 µg/g	1200 µg/g

µg/g = micrograms per gram
Source: Oil-Dri 1999.

SEISMICITY

The Project area is located in the Reno-Carson City Urban Corridor of the Sierra Nevada-Great Basin seismic belt. Persistently high levels of earthquakes characterize this seismic belt. Although large earthquakes do not occur at regularly spaced time intervals, the statistical average of magnitude 6 or greater earthquakes occurring in this seismic belt has been about one every 6 years, and magnitude 7 and greater earthquakes average about one every 30 years (dePolo and dePolo 1999). Two significant historical earthquakes have occurred near the Hungry Valley area, one with a magnitude of less than 5 and another with a magnitude of less than 4 (dePolo and dePolo 1999).

PALEONTOLOGY

Diatoms and ostracods are the only fossils documented as occurring in the geologic units within the proposed Project area, and neither are considered scientifically valuable or unique fossils. No sensitive fossils are recorded in or expected to be found within the Project area (EMA 2000a).

AIR RESOURCES

METEOROLOGY

Climate in the Project area is classified as high desert with annual average total precipitation less than 7.5 inches. Climate in the area is characterized by large variations in temperature, low precipitation, and moderate wind. Moist air masses entering the area from the Pacific Ocean are influenced by the Sierra Nevada Mountains. Summers are short and hot, and winters moderately cold.

TEMPERATURE AND PRECIPITATION

General meteorological conditions in the Project area are represented by data collected by the Western Regional Climate Center (WRCC) at Reno, Sparks, and Stead, Nevada. Average monthly temperature and precipitation data from these sites provide a description of general weather patterns in the region. Temperature data from all three sites are listed in **Table 3-2**.

The average daily temperature recorded at the Reno airport varies from 91 degrees Fahrenheit (° F) in July to 45° F in January. The average daily temperature recorded at the Sparks station varies from 90° F in July to 47° F in December. The average daily temperature recorded at the Stead station varies from 87° F in July to 21° F in December. The period of record for the Sparks and Stead stations is considerably shorter than for the Reno airport station. The Stead station is located to the north of the Reno/Sparks area at an elevation (5,120 feet) similar to the Project area.

Table 3-2 also shows the mean monthly precipitation data from the Reno, Sparks, and

Stead meteorological stations. Mean annual precipitation for the period of record was 7.38 inches at Reno and 8.35 inches at Sparks. Stead has an average annual precipitation of 12.34 inches for the period of record. These stations show similar annual precipitation trends, with heaviest precipitation falling from November through March as snow. Snowfall tends to be lighter at the Sparks station. Summer precipitation occurs mostly as scattered showers and thunderstorms.

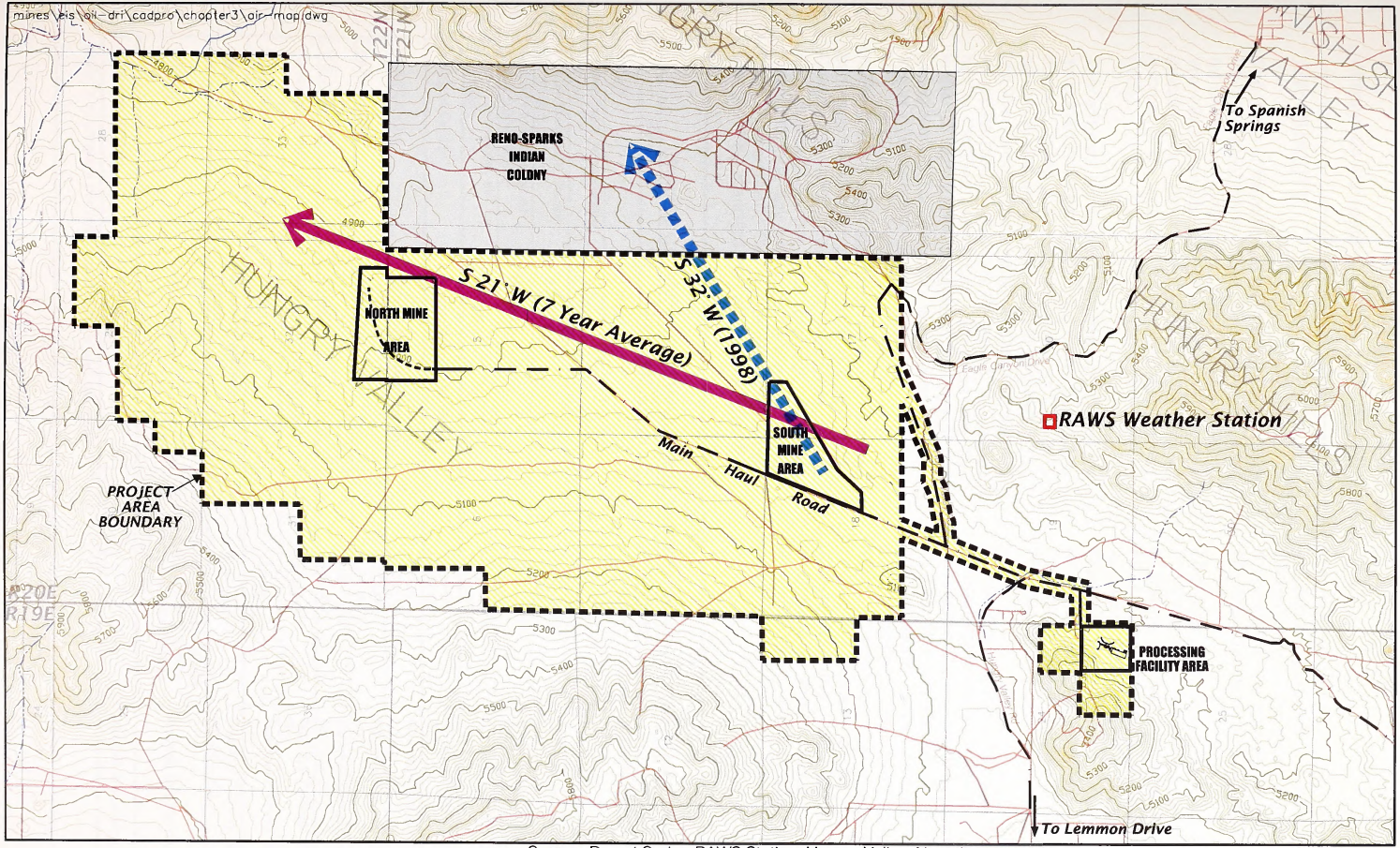
WIND SPEED AND DIRECTION

General wind speed and direction conditions in the Project area are represented by data compiled by the Western Regional Climate Center at Reno, Nevada. Average annual mean wind speed for Reno is 6.6 miles per hour (mph), with recorded gusts of 90 mph from a southwest direction. National Weather Service hourly wind speed and direction data have been used to depict the prevailing wind direction in Hungry Valley as shown in **Figure 3-4**. The 1998 wind direction of S 32 W shown on **Figure 3-4** is the most easterly flow recorded during the 9-year sampling period. For the listed period, wind direction is typically from the south, west, and west-northwest.

TABLE 3-2
Reno Clay Project Area Temperature and Precipitation

Station	Elevation (feet)	Period of Record		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Ann.
Average Maximum, Average Minimum, and Mean Temperature (degrees F)																
Reno WSFO Airport, Nevada	4,400	1988-2000	Max	45.4	51.0	56.4	64.0	72.5	81.6	91.1	89.4	81.4	69.7	55.6	46.4	67.0
			Min	20.2	24.1	27.0	31.4	38.5	44.4	49.4	47.3	40.8	32.2	25.1	20.2	33.4
			Mean	32.8	37.8	41.7	47.7	55.6	63.1	70.3	68.4	61.1	50.9	40.3	33.3	50.2
Sparks, Nevada	4,360	1988-2000	Max	47.3	51.4	59.4	65.6	72.2	81.0	90.0	88.9	82.3	71.2	56.5	47.0	67.7
			Min	23.9	25.9	31.5	35.3	41.6	46.7	52.7	50.9	44.6	35.4	28.1	21.5	36.5
			Mean	35.6	38.7	45.5	50.5	56.9	63.8	71.3	69.9	63.4	53.3	42.3	34.2	51.9
Stead, Nevada	5,120	1988-2000	Max	43.4	47.3	54.4	61.9	68.0	78.0	86.5	86.0	77.3	66.9	52.9	43.2	63.8
			Min	21.8	24.8	30.2	34.8	40.9	48.1	54.2	52.9	45.1	35.9	26.8	20.5	36.3
			Mean	32.6	36.0	42.3	48.4	54.6	63.3	70.3	69.4	61.2	51.4	39.8	31.9	50.1
Mean Monthly Precipitation (inches)																
Reno WSFO Airport, Nevada	4,400	1937-2000		1.15	1.00	0.78	0.41	0.62	0.44	0.27	0.23	0.35	0.42	0.78	0.99	7.38
Sparks, Nevada	4,360	1988-2000		1.48	1.07	0.98	0.30	0.82	0.56	0.22	0.31	0.56	0.44	0.77	0.85	8.35
Stead, Nevada	5,120	1985-2000		1.96	2.24	1.76	0.48	0.73	0.75	0.41	0.29	0.74	0.50	0.95	1.52	12.34

Note: Year 2000 data through 7/31/2000
Source: Western Regional Climate Center 2001



Source: Desert Spring RAWS Station, Hungry Valley, Nevada

March 2001

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0 Feet 4000

Average Wind Direction, 1992 - 2000

Note: 1992 and 2000 are partial years and not included in the average values

Most Easterly Flow Recorded During the 1992-2000 Sampling Period

Secondary Road

Drainage

Prevailing Wind Direction
Reno Clay Plant Project
Reno, Nevada
FIGURE 3-4

AIR QUALITY

The State of Nevada and the federal government have established ambient air quality standards for criteria air pollutants. The criteria pollutants are carbon monoxide (CO), lead (Pb), sulfur dioxide (SO_2), particulate matter smaller than 10 microns (PM_{10}), ozone (O_3), and nitrogen dioxide (NO_2).

The ambient air quality standards must not be exceeded in areas where the general public has access. **Table 3-3** lists the federal and Nevada air quality standards. National primary standards are the levels of air quality necessary, with an adequate margin of safety, to protect the public health. National secondary standards are the levels of air quality necessary to protect the public welfare from known or anticipated adverse effects of a regulated air pollutant.

Ambient air quality standards based on annual averages must not be exceeded for any year. Compliance with short-term standards allows one exceedance per year for SO_2 and CO standards, one day with exceedances for the 1-hour O_3 standard, 99th percentile compliance with the PM_{10} standard over a 3-year period. For practical purposes, Washoe County's interpretation of the short-term standards is that a violation of the standard occurs when there is any exceedance in that year (ERM 2000a).

The attainment status for pollutants within the Project area is determined by monitoring levels of criteria pollutants for which National Ambient Air Quality Standards (NAAQS) and Nevada Ambient Air Quality Standards exist. The Washoe County Air Quality Management Division is the agency responsible for maintaining the State Implementation Plan for Washoe County.

Air quality in the Reno Planning Area is classified as non-attainment for PM_{10} and there are areas of Washoe County classified as non-attainment for CO. The non-attainment designation means that violations of the Nevada or national air quality standards have been documented in the region. However, the proposed Processing Facility is located in air basins listed as unclassified and are assumed to be in attainment for these criteria pollutants. All of Washoe County is not in attainment for ozone.

TABLE 3-3
Washoe County/State of Nevada and National Ambient Air Quality Standards

Pollutant	Averaging Time	Concentration	Comments
Ozone	1 Hour	235 µg/m^3 (0.12 ppm)	National Primary Std. and Nevada Std.
Ozone-Lake Tahoe Basin, #90	1 Hour	195 µg/m^3 (0.10 ppm)	Nevada Std. Only
Carbon Monoxide, below 5,000' M.S.L.	8 Hours	10,000 µg/m^3 (9.0 ppm)	National Primary Std. and Nevada Std.
Carbon Monoxide, at or above 5,000' M.S.L.	8 Hours	6,670 µg/m^3 (6.0 ppm)	Nevada Std. only. National 8-hour Std. is same for all elevations.
Carbon Monoxide, all elevations	1 Hour	40,000 µg/m^3 (35 ppm)	National Primary Std. and Nevada Std.
Nitrogen Oxides	Annual Arithmetic Mean	100 µg/m^3 (0.05 ppm)	National Primary Std. and Nevada Std.
Sulfur Dioxide	Annual Arithmetic Mean	80 µg/m^3 (0.03 ppm)	National Primary Std. and Nevada Std.
Sulfur Dioxide	24 Hours	365 µg/m^3 (0.14 ppm)	National Primary Std. and Nevada Std.
Sulfur Dioxide	3 Hours	1,300 µg/m^3 (0.5 ppm)	National Secondary Std. and Nevada Std.
Particulate Matter as PM_{10}	Annual Arithmetic Mean	50 µg/m^3	National Primary Std. and Nevada Std.
Particulate Matter as PM_{10}	24 Hours	150 µg/m^3	National Primary Std. and Nevada Std.
Lead (Pb)	Quarterly Arithmetic 1Mean	1.5 µg/m^3	National Primary Std. and Nevada Std.
Visibility	Observation	In sufficient amount to reduce the prevailing visibility to less than 30 miles when humidity is less than 70%.	Nevada Standard only.
Hydrogen Sulfide	1 Hour	112 µg/m^3 (0.08 ppm)	Nevada Standard only.

µg/m^3 = microgram per cubic meter; ppm = part per million

AIR QUALITY MONITORING DATA

PM_{10} and CO ambient air quality data have been collected within the cities of Reno and Sparks since 1990. Three monitoring sites within the city of Reno and two sites in the city of Sparks have a total of six PM_{10} monitors. Four of the five monitoring sites also have CO monitors. **Tables 3-4** and **3-5** list available air quality monitoring data for the area near the Project site. The monitoring data cover the period of record of 1995 through 1999, with the exception of the CO monitors at sites #0016 and #1005.

The PM_{10} and CO data from the Reno and Sparks monitoring stations represent air quality within populated areas. The primary contributors to ambient particulate concentrations in populated areas are road dust, vehicle exhaust emissions, and residential wood smoke.

TABLE 3-4
PM_{10} Monitoring Data

Site	Year	Annual Mean ($\mu g/m^3$)	24-Hour High ($\mu g/m^3$)	24-Hour 2nd High ($\mu g/m^3$)
#0016 250 N. Lake Street Reno, NV	1995	36.4	97	70
	1996	31.5	107	60
	1997	33.3	88	81
	1998	31.9	122	70
	1999	36.9	197	77
#0020 4110 DeLucci Lane Reno, NV	1995	20.2	40	39
	1996	20.2	51	51
	1997	21.2	48	44
	1998	21.4	78	43
	1999	24.9	90	61
#0022 305 Galletti Way Reno, NV	1995	47.0	97	94
	1996	45.2	151	131
	1997	47.3	134	115
	1998	46.5	142	125
	1999	54.5	215	116
#1005- A 750 4th Street Sparks, NV	1995	26.5	59	57
	1996	26.8	88	62
	1997	30.9	82	71
	1998	28.4	61	60
	1999	28.8	59	55
#1005- B 750 4th Street Sparks, NV	1995	26.2	58	55
	1996	26.0	89	59
	1997	30.2	82	69
	1998	28.6	98	59
	1999	29.2	114	56
#2006 5399 Sun Valley Dr. Sparks, NV	1995	34.1	82	77
	1996	27.6	69	68
	1997	27.6	58	55
	1998	28.4	98	74
	1999	32.0	120	69

Note: $\mu g/m^3$ = micrograms per cubic meter

Source: USEPA 2000

TABLE 3-5
Carbon Monoxide (CO) Monitoring Data

Site	Year	Annual 1-Hour Mean (ppm)	1-Hour High (ppm)	1-Hour 2nd High (ppm)	8-Hour High (ppm)	8-Hour 2nd High (ppm)
#0016 250 N. Lake Street Reno, NV	1990	1.35	14.1	13.2	7.9	7.1
	1991	1.25	13.6	12.2	10.7	9.4
	1992	1.07	12.4	12.0	8.8	7.2
	1993	1.11	8.2	7.9	5.7	5.5
	1994	1.29	11.8	10.7	7.2	6.8
	1995	1.29	8.6	7.8	---	---
#0020 4110 DeLucci Lane Reno, NV	1995	0.84	4.8	4.4	3.2	2.5
	1996	0.77	5.0	4.9	4.3	3.2
	1997	0.63	4.0	4.0	2.7	2.7
	1998	0.74	4.1	4.1	3.0	2.8
	1999	0.79	4.4	4.4	3.4	3.0
#0022 305 Galletti Way Reno, NV	1995	1.54	9.3	8.4	6.2	6.0
	1996	1.46	10.9	10.9	7.8	7.6
	1997	1.64	12.1	10.9	8.9	7.7
	1998	1.08	10.5	9.5	8.0	6.6
	1999	1.09	9.6	9.5	8.6	7.1
#1005 750 4th Street Sparks, NV	1990	1.61	19.7	14.4	9.6	9.5
	1991	1.52	14.1	13.2	10.1	8.9
	1992	1.34	12.9	12.9	7.6	7.6
	1993	1.20	10.5	9.4	6.2	6.0
	1994	1.20	13.3	11.6	---	---

Note: ppm = parts per million
Source: USEPA 2001

PSD CLASSIFICATION

The area surrounding the proposed Project area is a designated Class II area as defined by the Federal Prevention of Significant Deterioration of Air Quality (PSD) program. The PSD Class II designation allows for moderate growth or degradation of air quality within certain limits above baseline air quality. Industrial sources proposing construction or modifications must demonstrate that proposed emissions will not cause significant deterioration of air quality in all areas. The standards for significant deterioration are much stricter for Class I areas than for Class II areas.

The nearest Class I area is Yosemite National Park located approximately 110 miles south of the proposed site. The Jarbidge Wilderness Area, also Class I, is located approximately 260 miles to the northeast. As Federal Mandatory Class I Areas, Yosemite and Jarbidge receive visibility protection through the PSD air quality permitting process. There are no Class I wilderness areas located within a 100-mile radius of the Project area. Wilderness areas that occur within a 100-mile radius of the site, most notably in California north of Yosemite, are not listed as Federal Class I areas.

OFFSITE SOURCES

The proposed Project area is in a relatively undeveloped area. A sand and gravel operation is located on private land approximately one-half mile southwest of the site. Four sites listed with the EPA as major sources in the Reno/Sparks area are located south and west of the Project area. A fifth major source is located approximately 65 miles northeast of the Project area. **Table 3-6** contains a list of the existing permitted major sources, their location, nature of business, and pollutant(s) emitted in quantities greater than 100 tons per year.

TABLE 3-6
Existing Permitted Major Sources of Air Pollutants

Facility	Location	Nature of Business	Pollutants Emitted
US Gypsum Company	Empire, Nevada	Gypsum Products	SO_2
Fire Training Academy	Echo Ave, Reno, Nevada	Fire Protection	PM_{10}
R Donnelley & Son	Lear Blvd, Reno, Nevada	Misc. Publishing	VOC
Sierra Pacific Power Company	Reno, Nevada	Electric Services	NO_2, Particulate, SO_2
Santa Fe Pacific Pipelines Partners	Nugget Ave, Sparks, Nevada	Petroleum Bulk Stations and Terminal	VOC

SO_2 = Sulfur Dioxide; PM_{10} = Particulate Matter smaller than 10 microns; VOC = Volatile Organic Compounds; NO_2 = Nitrogen Dioxide

Source: USEPA 2001

AESTHETICS

VISUAL RESOURCES

The objectives of the visual resource investigation are to identify and describe important visual resources that could be affected by the Proposed Action and related activities. Visual resources include landscapes that may be seen during activities in the area such as travel and recreation.

The study area is located in Hungry Valley, an area of hilly terrain that ranges from 4900 feet at valley floor to over 6000 feet at ridgeline. Sparsely vegetated hills of sagebrush and dry valleys in varying shades of tan and beige characterize the area. Dry washes meander through the project site. Sandy soil and rock are exposed in all areas due to sparse vegetation. Surface color ranges from light tan to darker shades of tan or beige. Vegetation ranges from tan to green (seasonal).

Views of the Project area are limited due to adjacent hilly terrain. The site cannot be seen from any major highway. Eagle Canyon Drive, the primary access route for the Reno-Sparks Indian Colony, provides a short duration view of the South Mine Area as it descends from the Hungry Hills. Therefore, potential viewers would include local residents, miners, and recreationists.

Visual Resource Management System

The BLM has developed a Visual Resource Management (VRM) system to classify visual resources based on scenic quality, visual sensitivity, and visual distance zones. **Table 3-7** lists management classes and various permissible levels of landscape alteration under the VRM system. Management classes are divided into four levels (I through IV), with Class IV allowing the greatest modification of the landscape by disturbance or development (BLM 1986a). All of the Project area is located within Class IV designation meaning that management activities may dominate the view and be the major focus of the viewer's attention, although impacts of management activities should be minimized through careful location, minimal disturbance, and repetition of basic elements.

TABLE 3-7
Visual Resource Management Objectives

Class	Objective
I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes, it does not preclude limited management activity. The level of change to the characteristic landscape should be low and must not attract attention.
II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color and texture found in the predominant features of the characteristic landscape.
III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant features of the characteristic landscape.
IV	The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. The impacts of these activities should be minimized through careful location, minimal disturbance and repetition of the basic elements.

Source: BLM 1986b.

Five key observation points (KOPs) have been established for evaluating visual contrasts for the Project (**Figure 3-5**). Factors considered in selecting these views included angle of observation, number of viewers, duration of view, relative apparent size of the Project, season of use, and lighting conditions. The views were selected to represent locations on roads approaching the Project area from which a person may be expected to view the site features. Seven views from the five KOPs were identified and evaluated. The selected views for this project are shown in **Figures 3-6a** through **3-6d.**

KOP-1 is located at the Reno-Sparks Indian Colony cemetery. This location offers the highest elevation view of the KOPs of the North Mine Area approximately one mile away.

KOP-2 is located at the intersection of Eagle Canyon Drive and Running Deer. This location represents the most well traveled point of the residential area within the Reno-Sparks Indian Colony. View 2a is of the North Mine Area and 2b is of the South Mine Area.

KOP-3 is located at the intersection of the proposed new section of Hungry Valley Road and Eagle Canyon Drive. This rebuilt curve offers the highest (5200') elevation for viewing the South Mine Area from a roadway.

KOP-4 is located at the Reno Radio Control Model Airplane Club airport. View 4a is of the North Mine Area approximately one mile away and 4b is of the South Mine Area approximately one-half mile away.

KOP-5 is located along the South Access Route. This would be the only view of the proposed Processing Facility approximately one-half mile to the north.

Noise

The ambient noise of a given environment is the all-encompassing sound associated with that environment, and is due to a combination of noise sources from many directions; near and far. Existing ambient noise levels in the Project area are a combination of noise due to animals, insects, human activities, vehicles, and aircraft. Existing ambient noise levels in the Project area are typical for a rural setting.

Three potential noise receptor sites where identified within two miles of the Project area. The locations of these potential receptors are shown in **Figure 3-7.**

Typical existing day-night average noise level (L_{dn}) in residential areas, such as the Reno-Sparks Indian Colony, Chickadee Drive area residences, and the residential areas along Hungry Valley Road, range between 40 and 45 dBA, similar to levels for typical rural residential areas. In quiet areas, with limited activities, such as sparsely developed areas within Hungry Valley, existing ambient levels would likely range between 30 and 40 dBA. **Table 3-8** shows typical outdoor ambient noise levels for several types of residential areas.

The L_{dn} is a single number descriptor that represents constantly varying sound level during a continuous 24-hour period. The L_{dn} includes a 10 dBA penalty that is added to noise that occurs between 10:00 p.m. and 7:00 a.m. The penalty is used to account for increased annoyance caused by noise levels at night. The *1996 Washoe County Development Code, Article 414–Noise and Lighting Standards* determines maximum allowable noise levels in terms of L_{dn} values. **Table 3-9** summarizes applicable maximum noise levels allowed by Washoe County Code.

TABLE 3-8
Typical Outdoor Ambient Noise Levels

Approximate L_{dn}	Description
55-60 dBA[1]	Urban residence
45-50 dBA	Suburban residence on outskirts of city
45-50 dBA	Small town residence
40-45 dBA	Rural residence
30-40 dBA	Undeveloped or sparsely developed land

[1] dBA = A-weighted decibel sound scale

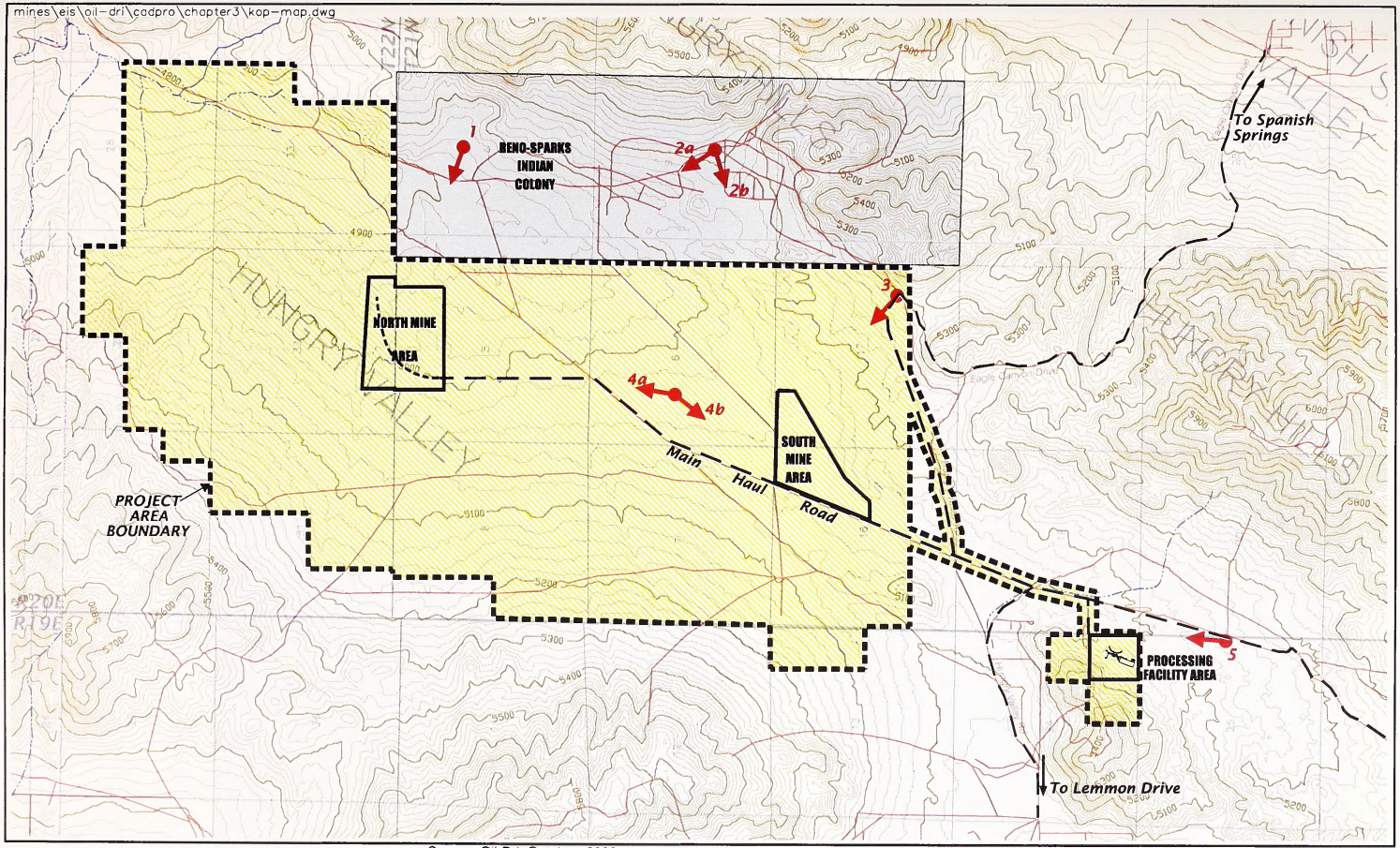
Source: Handbook of Acoustical Measurements and Noise Control 1998.

TABLE 3-9
Washoe County Maximum Allowable Noise Levels

Condition	Allowable L_{dn} at Property Line	Description
A	75 dBA	Industrial development within an industrial zone.
B	65 dBA	Property abutting residential development.
C	65 dBA	Property abutting public/quasi-public facilities, such as parks, schools, hospitals, and group and child care facilities.

Source: Washoe County Development Code 1996.

Noise generated by trucks, bulldozers, and other equipment generally ranges from 90 to 100 dBA at the source. For comparison **Table 3-10** lists various noise sources and the range of dBA associated with these noises.



Source: Oil-Dri, October, 2000

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N

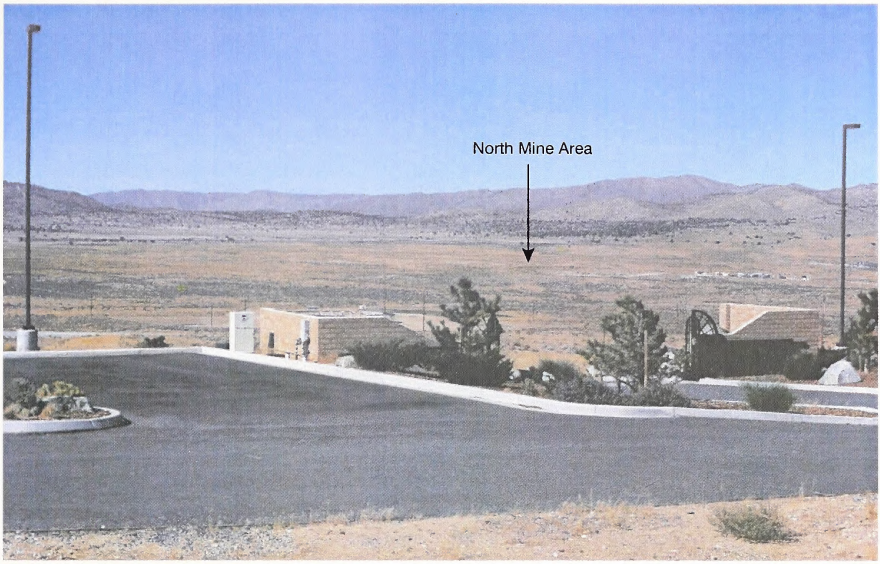
0 Feet 4000

Creek/Drainage

Secondary Road

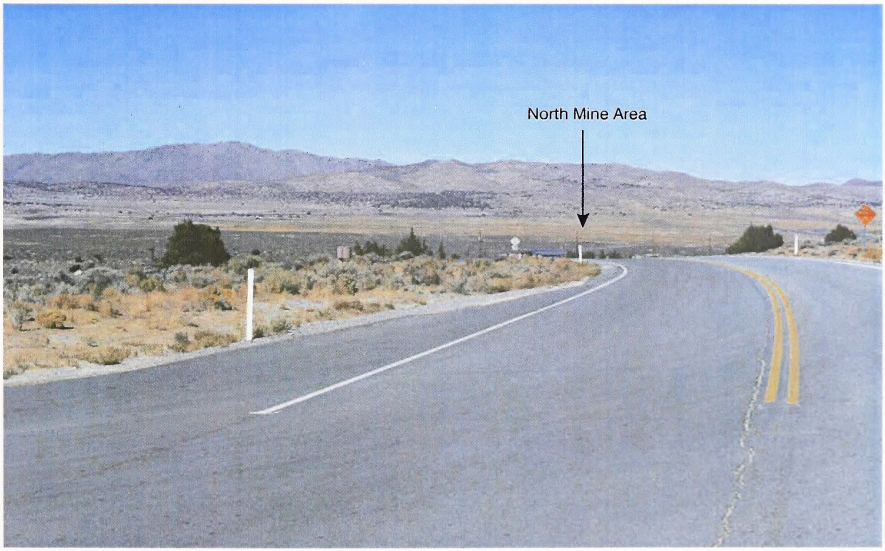
Main Haul Road

KOP Location Map
Reno Clay Plant Project
Reno, Nevada
FIGURE 3-5



Looking northwest from RSIC cemetery.

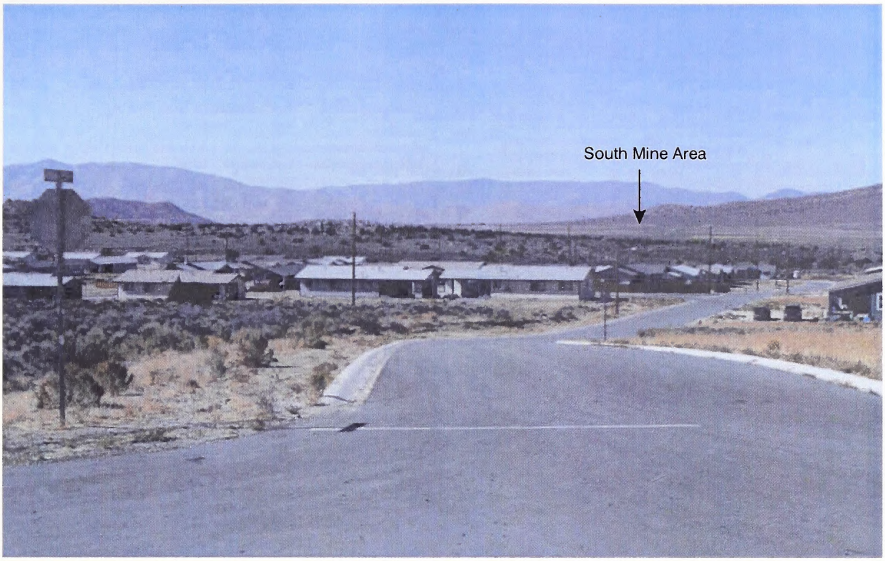
KOP 1



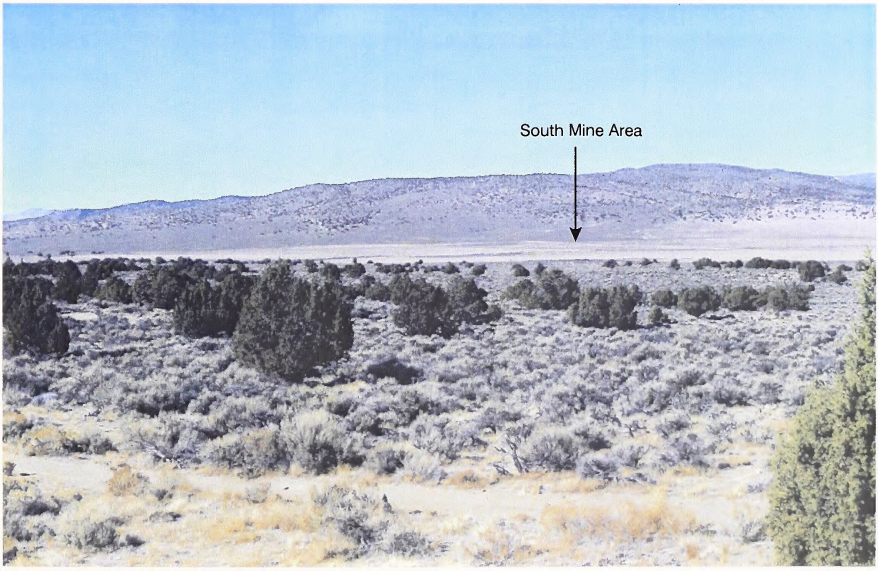
Looking northwest from intersection of Running Deer and Eagle Canyon Drive (RSIC).

KOP 2a

Existing Conditions
Oil-Dri Reno Clay Plant
Reno, Nevada
FIGURE 3-6a

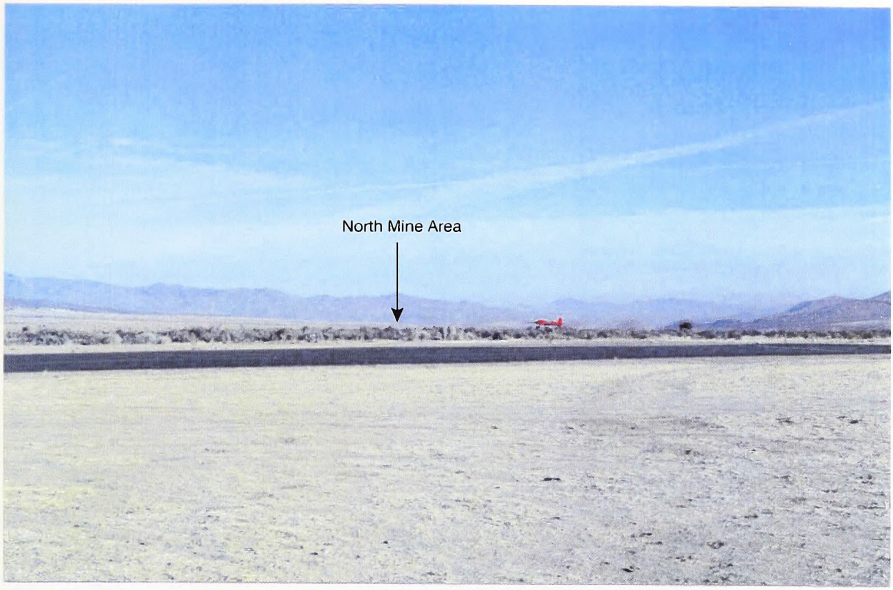


Looking southwest from intersection of Running Deer and Eagle Canyon Drive (RSIC). **KOP 2b**



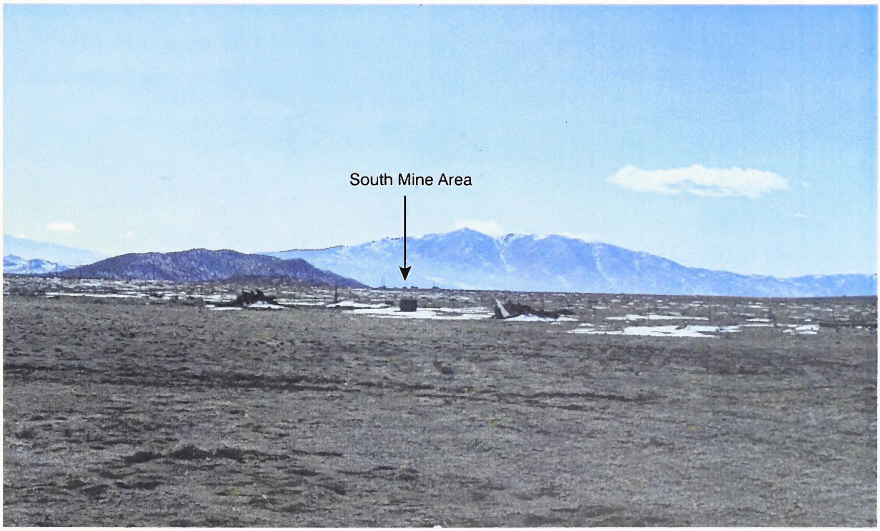
Looking northwest from intersection of proposed new section of Hungry Valley Road and Eagle Canyon Drive. **KOP 3**

Existing Conditions
Oil-Dri Reno Clay Plant
Reno, Nevada
FIGURE 3-6b



Looking north from Reno Radio Control Model Airplane Club Airport.

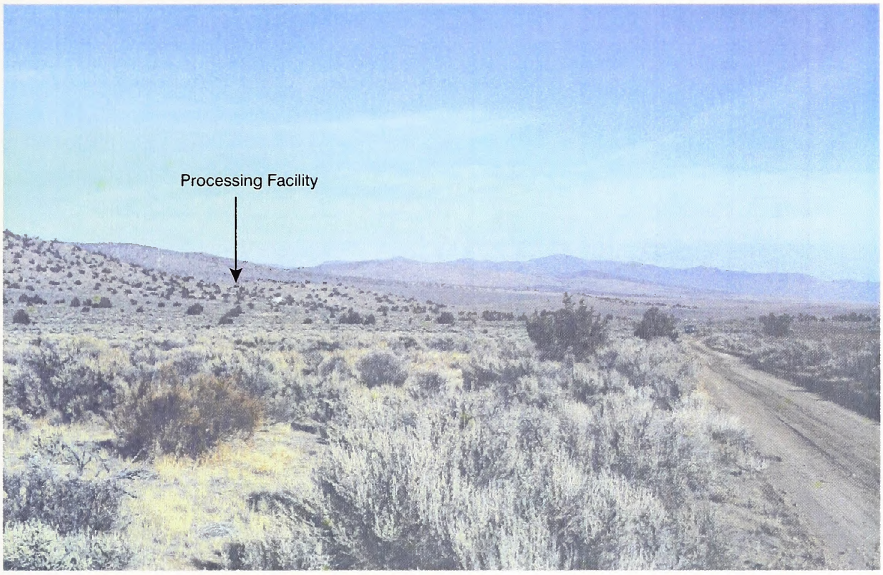
KOP 4a



Looking south from Reno Radio Control Model Airplane Club Airport.

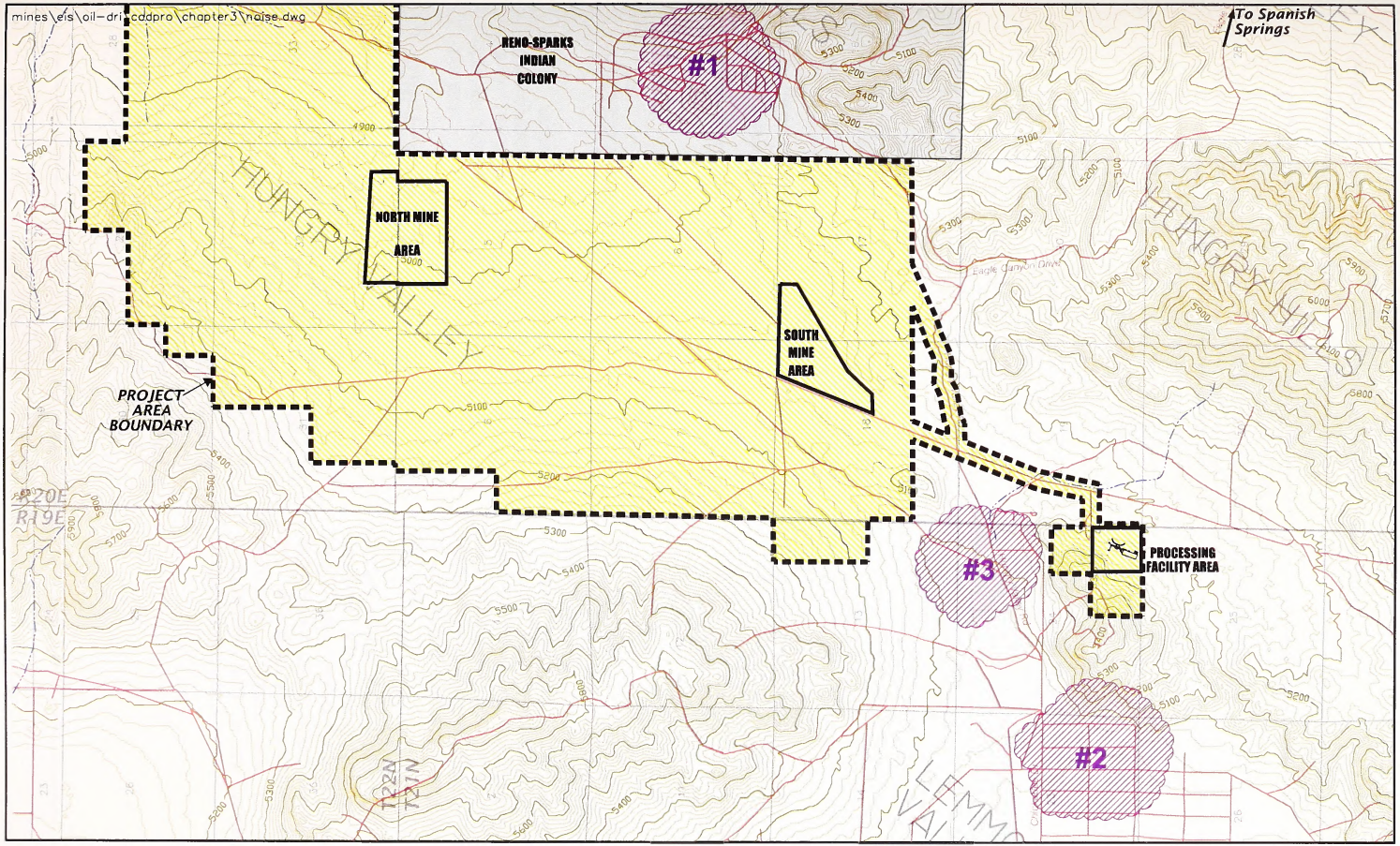
KOP 4b

Existing Conditions
Oil-Dri Reno Clay Plant
Reno, Nevada
FIGURE 3-6c



Looking north from South Access Route (1/2 mile south of proposed Processing Facility). KOP 5

Existing Conditions
Oil-Dri Reno Clay Plant
Reno, Nevada
FIGURE 3-6d



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Noise Receptor Site

#1 Reno-Sparks Indian Colony Residential

#2 Chickadee/Lemmon Valley Residential

#3 Hungry Valley Rural

Noise Receptor Sites
Reno Clay Plant Project
Reno, Nevada
FIGURE 3-7

TABLE 3-10
Relative Scale of Various Noise Sources

Noise Level (dBA)[1]	Common Indoor Noise Levels	Common Outdoor Noise Levels
110	Rock band	
105		Jet flyover @ 1000 ft.
100	Inside New York subway train	
95		Gas lawn mower @ 3 ft.
90	Food blender @ 3 ft.	
80	Garbage disposal @ 3 ft., Shouting @ 3 ft.	Noisy urban daytime
70	Vacuum cleaner @ 10 ft.	Gas lawn mower @ 100 ft.
65	Normal speech @ 3 ft.	Commercial area, heavy traffic @ 300 ft.
60	Large business office	
50	Dishwasher in next room	Quiet urban daytime
40	Small theater, large conference room	Quiet urban nighttime
35		Quiet suburban nighttime
33	Library	
28	Bedroom @ night	
25	Concert hall (background)	Quiet rural nighttime
15	Broadcast and recording studio	
5	Threshold of hearing	

[1] dBA = A-weighted decibel sound scale.

Source: Hatano 1980.

WATER RESOURCES

This section describes surface water and groundwater resources in the study area (**Figure 3-1**). The proposed Project is located in an arid climate receiving 7 to 8 inches of precipitation per year.

SURFACE WATER

The two proposed mine pits would be located in Hungry Valley which is in the Warm Springs Valley hydrographic area (no. 84) designated by the State of Nevada. This area is part of the Truckee River Basin (hydrographic region) which drains northward to Pyramid Lake, approximately 15 miles northeast of the proposed Project area. Hungry Valley drains northeast to Warm Springs Valley, which drains through Mullen Pass to Pyramid Lake. Other valleys adjacent to Hungry Valley include Spanish Springs Valley and Antelope Valley (**Figure 3-1**).

The proposed Processing Facility would be located along the east side of Lemmon Valley about 1.5 miles from the edge of Hungry Valley. Lemmon Valley is in the eastern part of the Lemmon Valley hydrographic area (no. 92B). This valley is a closed drainage (i.e., playa) with all surface water draining to the middle of the valley to Swan and Silver lakes. Lemmon Valley is part of the Western hydrographic region in Nevada.

Surface water occasionally flows in ephemeral channels within Hungry Valley and Lemmon Valley during periods of heavy precipitation. A large portion of this water, however, evaporates and infiltrates into unconsolidated valley-fill sediments. There are no specific flow measurement data for any drainages near the proposed mine site.

SPRINGS AND SEEPS

Two developed springs, Hungry Spring and Little Hungry Spring (NW¼ Section 27, T22N, R20E), are located in Hungry Valley (BLM 2000). These springs are located about 2 miles northeast (i.e., downstream) from the proposed North Mine Area (**Figure 3-1**). Shovel Spring (an abandoned spring near the center of Section 30, T21N, R20E) is located approximately 0.5-mile southeast of the Processing Facility (**Figure 3-1**). Flow rate, quality, and origin of these three springs are unknown, however, they are important sources of year-round water for cattle and wildlife in the study area (BLM 2000).

GROUNDWATER

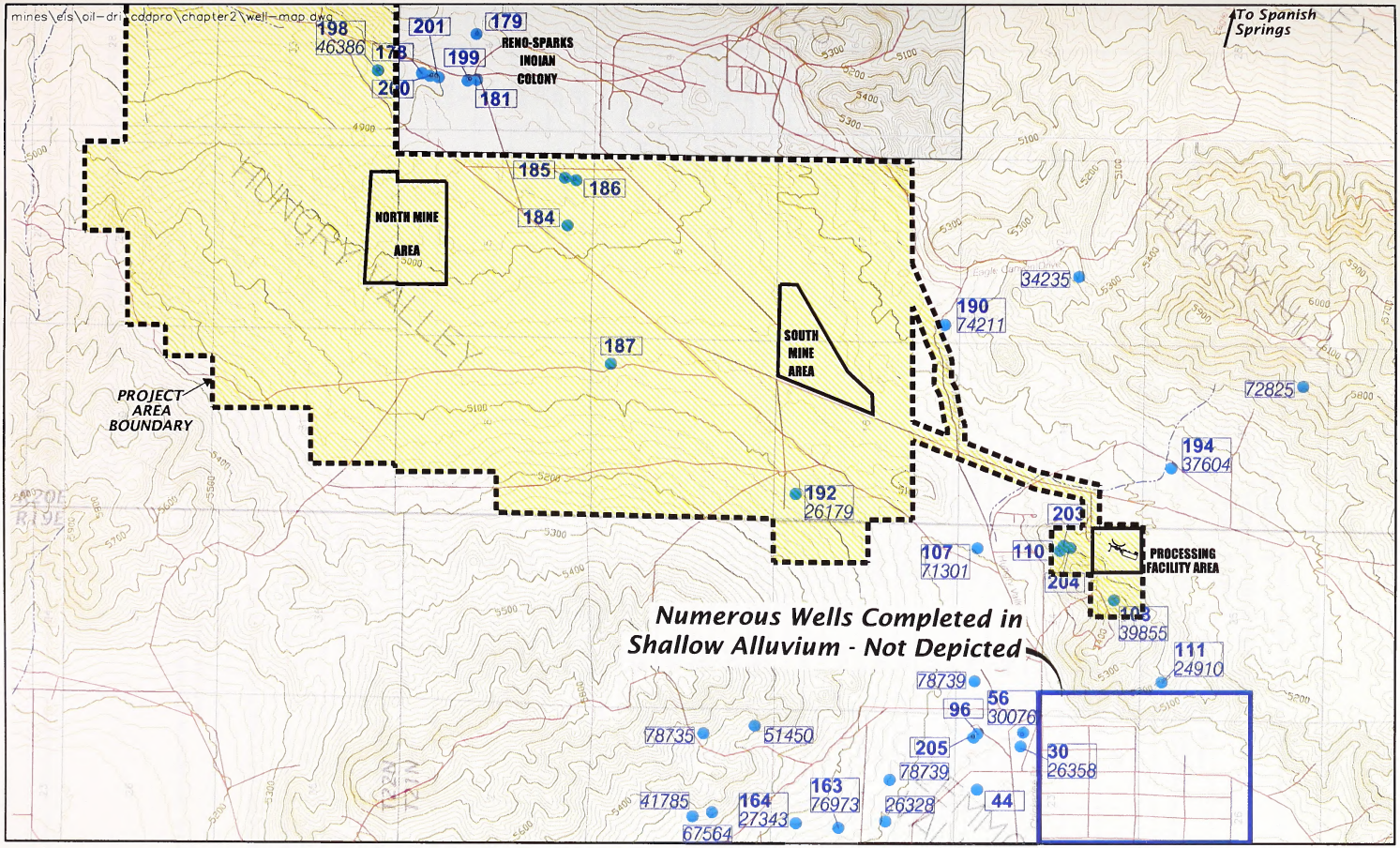
Groundwater is present in the Project area in unconsolidated valley fill sediment and in bedrock. The sediment consists of Quaternary-age alluvium, talus, slope wash, alluvial fan, and eolian deposits (i.e., various mixtures of silt-sand-gravel). These sediments typically overlie Pleistocene- and Pliocene-age fluvial-lacustrine sedimentary material of interbedded sandstone, siltstone, and clay. The lower Pliocene-age sedimentary rocks host the clay deposits proposed for mining in the North and South Mine areas. In these proposed mine areas, a thin veneer of unconsolidated sediment (i.e., <13 feet thick) generally overlies the mineable clay deposit. Igneous granitic-type intrusive and extrusive rocks also are present in the study area. See the *Geology, Minerals, and Paleontology* section in this chapter for more information on geologic setting.

A portion of the precipitation that falls on the valley fill sediments readily infiltrates into the unconsolidated material, recharging shallow groundwater in the sediments, and deeper groundwater in the sedimentary and igneous rocks. The shallow groundwater system in unconsolidated sediments is likely of limited extent in the study area. The primary aquifer in the Project area is interbedded siltstone and sandstone, with lesser amounts of groundwater likely in fracture zones of igneous rocks. The clay beds significantly impede vertical movement of groundwater, thereby, reducing recharge to deeper hydrostratigraphic units. Hydraulic conductivity of sedimentary deposits in Lemmon Valley ranges from 0.005 feet per day for fine-grained sediment to 35 feet per day for coarse-grained sediment (Van Hoozer 1994).

General direction of groundwater flow in Hungry Valley is expected to be similar to the direction of surface water drainage in the valley (i.e., locally from surrounding mountains and hills to the center of the valley and regionally to the northeast toward Warm Springs Valley and Pyramid Lake). In the portion of Lemmon Valley that would contain the proposed Processing Facility, groundwater likely flows westward toward the center of Lemmon Valley.

Several wells are located in the vicinity of the proposed mine pits in Hungry Valley and the proposed Processing Facility in Lemmon Valley (**Figure 3-8**). A listing of wells within the study area is presented in **Table 3-11**. Ten wells are identified within a 1-mile radius of the proposed North Mine Area, most of which are located within the Reno-Sparks Indian Colony. These wells within the Colony boundary generally are within a depth range of about 200 to 800 feet, some of which are public supply wells. Five wells are located within 1 mile of the proposed South Mine Area, with depths in the range of 75 to 600 feet. Depth to water in most of these Hungry Valley wells is less than 100 feet below ground surface.

Numerous wells are located within a 1-mile radius of the proposed Processing Facility (see insert **Figure 3-8**). The majority of these wells, however, are associated with residential areas to the west of the site in Lemmon Valley. Eight wells, not associated with these residential areas, are located within 1 mile of the Processing Facility (**Table 3-11**). Depths of these wells range between 200 and 400 feet, with water levels generally in the range of 50 to 200 feet below ground surface.



Well Locations - SE Quadrant
Reno Clay Plant Project
Reno, Nevada
FIGURE 3-8

TABLE 3-11
Partial Well Inventory Near Proposed Mine Pits and Facilities
Reno Clay Plant Project

Well ID [1]	Owner [2]	Township & Range	Section	Qtr/Qtr Section	Date Installed	Total Depth (ft)	Water Level (ft)	Use
Wells Within 1-Mile Radius of North Mine Area								
178 41740	RS Indian Colony	21N, 20E	4	NE / NW	6/93	695	25	Public Supply
179 39122	Waters	21N, 20E	4	SW / NE	4/92	196	100	Domestic
181/199 30534	RS Indian Colony	21N, 20E	4	SE / NW	10/88	450	27	Public Supply
184 39378	Duncan	21N, 20E	5	SW / SW	9/92	239	160	Domestic
185 25994	J. Schade Construct.	21N, 20E	5	SE / SW	9/85	185	60	Domestic
186 26023	J. Schade Construct.	21N, 20E	5	SE / SW	2/85	175	56	Domestic
187	Darling	21N, 20E	7	NE / NE	11/53	76	12	Domestic
198 46386	Indian Health S.	22N, 20E	33	SE / SW	10/93	840	13	Unused
200 31673	RS Indian Colony	21N, 20E	4	SE / NW	4/89	670	Unknown	Public Supply
201	RS Indian Colony	21N, 20E	4	NE / NW	Unknown	Unknown	Unknown	Public Supply
Wells Within 1-Mile Radius of South Mine Area								
107 71301	Arnold	21N, 19E	24	NE / NE	1/98	263	37	Domestic
187	Darling	21N, 20E	7	NE / NE	11/53	76	12	Unknown
190 74211	Wiltsie	21N, 20E	17	SW / SW	10/98	600	445	Domestic
192 26179	Moncravie	21N, 20E	18	NW / NW	4/84	328	53	Domestic
Wells Within 1-Mile Radius of Processing Facility [3]								
107 71301	Arnold	21N, 19E	24	NE / NE	1/98	263	37	Domestic
108 39855	Lacey	21N, 19E	24	SW / SE	12/92	350	280	Domestic
110	Oil-Dri Corp.	21N, 19E	24	NE / SE	1/69	202	181	Domestic
111 24910	James	21N, 19E	25	NW / NW	8/83	220	55	Domestic
194 37604	Dupree	21N, 20E	30	NE / NW	10/91	270	160	Domestic
203	Oil-Dri Corp.	21N, 19E	24	NE / SE	Unknown[5]	Unknown	Unknown	Commercial
204	Oil-Dri Corp.	21N, 19E	24	NE / SE	Unknown[5]	Unknown	Unknown	Commercial
--- 78739	Citadel Comm.	21N, 19E	24	NW	11/99	353	128	Domestic

1 First well ID number is associated with the EMA (2000b) report, and the second ID number is the well log number assigned by the Nevada Division of Water Resources (2000).
2 RS = Reno-Sparks; S. = Service.
3 List of wells in this category does not include numerous wells located in residential areas.
4 Sections 14, 23, and 26, T21N, R19E (see **Figure 3-8**). A listing of all wells inventoried in study area is located in the project file at BLM Field Office in Carson City, Nevada.
5 Wells installed prior to Oil-Dri ownership and limited records exist.

Source: EMA 2000b; Nevada Division of Water Resources 2000.

A stock well located near the proposed South Mine Area (SW¼ Section 8, T21N, R20E) in the center of Hungry Valley had a water level of about 55 feet below ground surface in June 1999 (Van Hoozer 2000). Total depth of this well is unknown. Groundwater was not encountered during drilling of exploration borings in the proposed North and South Mine Areas (Heivilin 2000), some of which were drilled to depths of 100 feet.

A well located at the radio towers near the proposed Processing Facility (NW¼ Section 24, T21N, R19E) was monitored for water levels during the period 1992-97 with resulting measurements of 96 to 105 feet below ground surface (Van Hoozer 2000). During this six-year period, there was a general declining trend in the water level, averaging approximately 1.5 feet per year. This well (well no. 78739) was deepened in 1999 and is included in **Table 3-11**.

The U.S. Geological Survey (USGS 2000) has monitored water levels for several wells in Lemmon Valley (hydrographic areas 92A and 92B). Most of the wells are less than 100 feet deep with water levels typically in the range of 40 to 60 feet below ground surface (USGS 2000).

Quality of groundwater in the study area is characterized by samples collected from two private wells located in Lemmon Valley near the proposed Processing Facility (SE¼ Section 24, T21N, R19E). Results of the water quality analyses from these two wells, sampled in October 1999, are presented in **Table 3-12**. Groundwater from the wells is characterized as bicarbonate-type with no dominant cation. Total dissolved solids are less than 410 milligrams per liter (mg/l) and pH is neutral (6.7 to 7.1 standard units). Calculated hardness is in the range of 150 to 220 mg/l, and sulfate ranges from 23 to 33 mg/l. Concentrations of metals are low or below laboratory detection limits. Nitrate concentrations are 3.4 and 10.0 mg/l. Comparison of the groundwater quality analyses with Nevada's drinking water standards (**Table 3-12**) shows that all parameters are lower than the standards, with the exception of one nitrate concentration that equals the standard of 10.0 mg/l. This indicates that groundwater in the vicinity of the well may be impacted from nearby septic systems. No coliform bacteria were detected in the water samples.

WATER USE/RIGHTS

Environmental Management Associates (EMA 2000b) conducted a search of water rights for the Project area listed with the Nevada Division of Water Resources. Eight water rights were identified for the study area (**Table 3-13**), all of which are for groundwater sources. Wells with designated water rights that are closest to the proposed mine site include four deep wells in the Reno-Sparks Indian Colony (NW¼ Section 4, T21N, R20E). These wells are approximately 0.5-mile east of the proposed North Mine Area. Two wells with water rights on property owned by Oil-Dri are located approximately 700 feet north of the proposed mine Processing Facility (SE¼ Section 24, T21N, R19E). The final two wells with designated water rights in the study area are located in the east-half of Section 23 (T21N, R19E) approximately one mile west of the proposed Processing Facility. These wells are used for industrial (Lemmon Valley Land Company) and recreational (Washoe County) purposes.

Annual groundwater yield in the Warm Springs Area hydrographic area (no. 84) is 3,000 acre-feet per year (AF/yr), and is 1,500 AF/yr in the Lemmon Valley hydrographic area (no. 92) (Nevada Division of Water Planning 2000).

WATER QUALITY STANDARDS

Nevada water is regulated for quality standards that have been established by the State of Nevada under the Nevada Water Pollution Control regulations and statutes (Nevada Administrative Code [NAC] 445A.070 et seq.; Nevada Revised Statutes [NRS] 445.244). Water quality criteria are designated numerically for beneficial uses (e.g., irrigation, livestock, aquatic life, recreation, municipal supply, domestic supply, industrial supply, and propagation of wildlife), and as narrative standards applicable to all water of the state. For the proposed Reno Clay Plant Project, surface water standards are not applicable because no surface water resources are located near the Project area. In addition, no surface discharges would occur from the mine operation. Drinking water standards applicable to groundwater are included on **Table 3-12**.

TABLE 3-12
Chemical Analysis of Groundwater Samples
Reno Clay Plant Project

Parameter	Water Quality Analyses		Drinking Water Standard	
	Well No. 203	Well No. 204	Primary	Secondary
TDS	279	406	NA	500
pH (std. Units)	7.05	6.76	NA	6.5 – 8.5
Turbidity (NTU)	0.6	0.7	NA	NA
Alkalinity	160	183	NA	NA
Calcium	32	47	NA	NA
Magnesium	17	24	125	NA
Potassium	2.3	4.2	NA	NA
Sodium	38	44	NA	NA
Chloride	15	42	NA	250
Fluoride	<0.5	<0.5	4.0	2.0
Sulfate	23	33	NA	250
Silica	30	42	NA	NA
Nitrate (N)	3.4	10.0	10	NA
Total Coliform	absent	absent	absent	absent
E. coli	absent	absent	absent	absent
Arsenic	<0.001	<0.001	0.01	NA
Barium	0.025	0.051	2.0	NA
Copper	<0.001	0.043	1.3	1.0
Iron	<0.05	<0.05	NA	0.3
Manganese	0.006	0.007	NA	0.05
Zinc	0.01	2.4	NA	5.0

Note:
1. All units in mg/L unless otherwise shown.
2. TDS = total dissolved solids; NTU = nephelometric turbidity units; NA = not applicable – no standard has been established.
3. Well No. 1 and Well No. 2 are located on Oil-Dri property approximately 700 feet north of the proposed Processing Facility. Both wells are located in Section 24, T21N, R19E.

Source: EMA 2000b; Nevada Administrative Code (NAC) 445A.119 & 445A.144.

TABLE 3-13
Listed Water Rights Near Proposed Mine Pits and Facilities
Reno Clay Plant Project

Application No.	Well ID [1]	Township & Range	Qtr,Qtr Section	Status	Filing Date	Type of Use	Annual Appropriation Rate (MG)[2]	Owner
Wells Within 1-Mile Radius of North Mine Area								
57930	178	21N, 20E	NE,NW 4	Permit	Unknown	Public Supply	Unknown	Reno-Sparks Indian Colony
52089	199	21N, 20E	SE,NW 4	Permit	5/88	Public Supply	59.86	Reno-Sparks Indian Colony
53313	200	21N, 20E	SE,NW 4	Permit	5/89	Public Supply		Reno-Sparks Indian Colony
60214	201	21N, 20E	NE,NW 4	Permit	7/94	Public Supply		Reno-Sparks Indian Colony
Wells Within 1-Mile Radius of South Mine Area								
No listed water rights for this area.								
Wells Within 1-Mile Radius of Processing Facility								
22528	203	21N, 19E	NE,SE 24	Certificate	4/65	Commercial	2.97	Oil-Dri Corp.
24798	204	21N, 19E	NE,SE 24	Certificate	12/68	Commercial		
31737	205	21N, 19E	NE,NE 23	Certificate	5/77	Industrial	0.40	Lemmon Valley Land Co.
37165	206	21N, 19E	NW,SE 23	Certificate	3/79	Recreation	0.47	Washoe County

1. Well ID number is associated with the EMA (2000b) report. Also see Table 3-11 for a listing of wells in the study area.
2. MG = million gallons.

Source: EMA 2000b; Nevada Division of Water Resources 2000.

SOIL

Information for soil resources in the Project area was obtained from the Soil Survey of Washoe County, Nevada, South Part (USDA 1983). The survey was conducted at the Order III reconnaissance level and was reviewed to identify existing soil in the areas proposed for disturbance and to disclose potential erosion hazards and general reclamation related parameters for those soil types. Additional information concerning the physical and chemical properties of soil in the Project area was obtained from the Natural Resource and Conservation Service (NRCS).

Distribution of soil map units within the Project area (including potential access routes) is shown in **Figure 3-9 and Table 3-14**. Depth of soil varies throughout the Project area. Shallow soil, less than 20 inches to bedrock, is found along weathered slopes including dissected alluvial fans and terraces, dissected pediments, pediment remnants, and rolling uplands. These map units include Indian Creek, Luppino, Acrelane, Chalco, Celeton Variant, and Stodick soil (see **Table 3-14**). Moderately deep soil, 20 to 40 inches, is encountered on pediments, strath fans and terraces, alluvial fans and terraces, and include Aquinas, Verdico, and Reno soil map units. Deep to very deep soil, 60 inches or more, is found within the Haybourne, Lemm, Kayo, Aladshi, Spasprey, and Wedertz soil map units. These soil types are located closer to the valley floor on alluvial fans and low stream terraces. Soil in the Project area exhibits low to moderate available water holding capacity, while permeability is variable with most soil having slow to moderately slow permeability. Surface runoff varies from very slow to rapid.

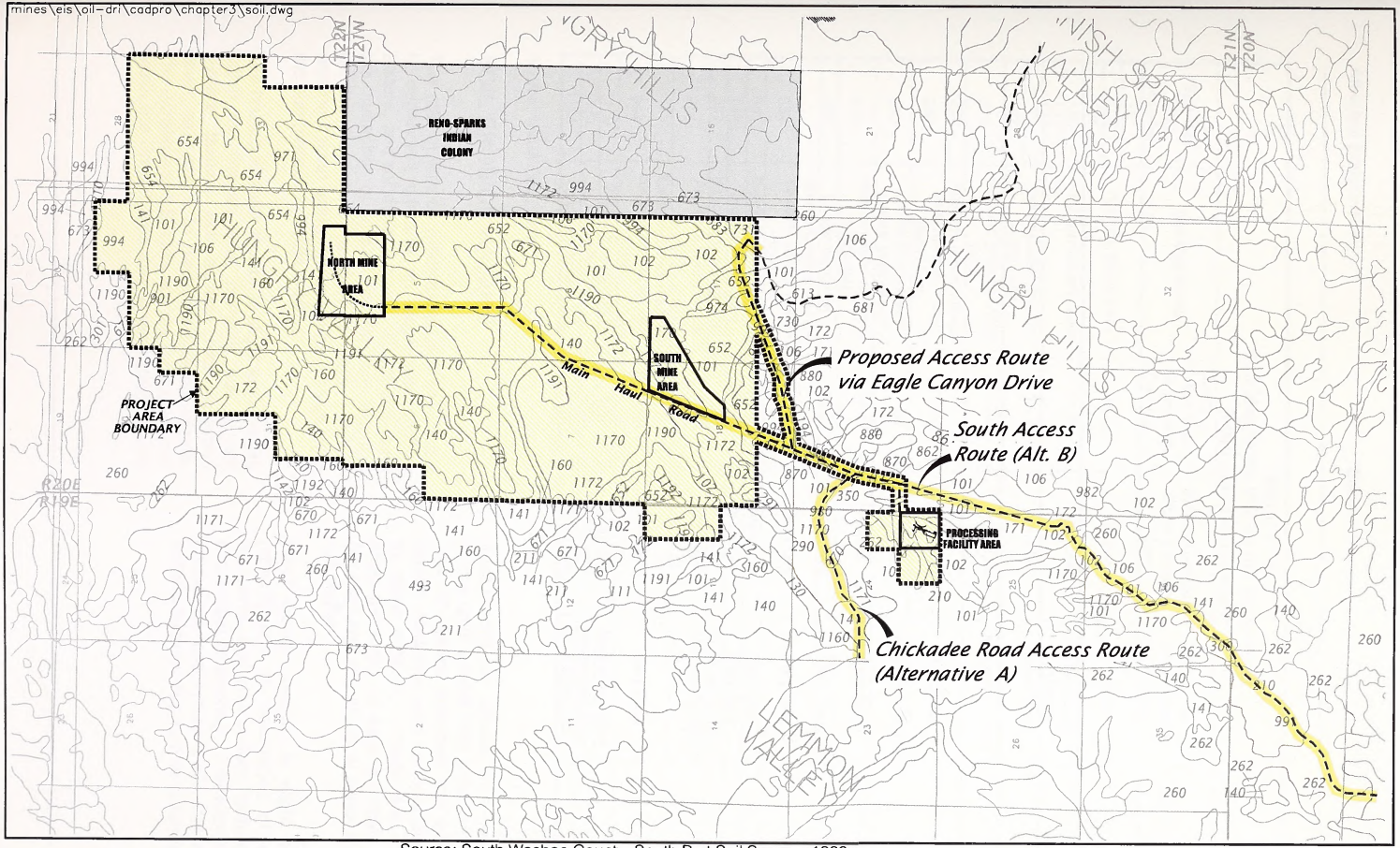
Soil may be of limited value for reclamation purposes if one or more restrictive properties are present. Restrictive properties are physical or chemical in nature and result in the inhibition of plant growth, or in making the soil structurally unsound. Soil properties considered most important when determining use as salvage material include: texture, profile depth to bedrock or duripan, coarse fragments (greater than three inches in diameter) in the profile, salt content, and pH. Nonsoil features such as steep slopes, rough terrain, and rock outcrop may limit access for salvage activities, though these particular parameters are not relevant to the Project area.

Soil found in the area varies in its ability to support revegetation. On some soil, vegetation is relatively easy to establish and maintain, the surface is stable and resists erosion, and the reconstructed soil has good potential productivity. Others can be vegetated and stabilized by modifying one or more properties. Topdressing with better material or application of soil amendments may be necessary for satisfactory performance. Soil also occurs that has such severe problems that revegetation and stabilization may be difficult and costly. Top dressing with better material is often necessary to establish and maintain vegetation.

Using the most limiting characteristics of any soil map unit component, expected reclamation success is best for most of the Aquinas series in soil map units 101, 102, and 106. Other soil types, if disturbed, would likely need some type of amendment or topdressing in order to effectively reestablish vegetation after salvage.

The NRCS guide rates the suitability of soil based on major properties that influence erosion and stability of the surface, and the productive potential of the reconstructed soil. A number of restrictive properties are evaluated in descending order of importance. The reconstruction of soil in drastically disturbed areas involves replacing layers of soil material or unconsolidated geologic material, or both, in a vertical sequence of such quality and thickness that a favorable plant growth medium results.

Shallow depth to a restrictive layer is the most common limiting characteristic of soil in the Project area. Eighteen of the soil map units in the area rate as "poor" overall. Information on each soil series including percent of soil series included in each mapping unit, slope range, landform, depth to induration or bedrock, rooting restricting depth (RRD), permeability, available water holding capacity (AWC), surface runoff class, hydrologic group, and erosion hazard potential is contained in Soil Survey of Washoe County, Nevada, South Part (USDA 1983). The NRCS database also provided cation exchange capacity (CEC), sodium adsorption ratio (SAR), percent organic matter, percent calcium carbonate, and percent weight rock fragments.



Source: South Washoe County, South Part Soil Survey - 1983

March 2001

Soils Impacted Area

101 Soil Map Unit Number (See Table 3-14)

Soil Map Units
Reno Clay Plant Project
Reno, Nevada
FIGURE 3-9

TABLE 3-14
Soil Map Units Within the Study Area
Reno Clay Plant Project

Soil Map Unit Number	Soil Unit Name	Depth to Induration or Bedrock (Inches)	Profile Available Water Capacity Class	Profile Permeability Class	Surface Runoff Class
101 102 106	Aquinas sandy loam	30-40	Moderate	Slow	Medium
140 141	Haybourne loamy sand	> 60	Moderate	Moderately Rapid	Slow
171 172	Indian Creek gravelly sandy loam	14-20	Very Low	Very Slow	Slow
210	Luppino gravelly sandy loam	12-20	Very Low	Moderately Slow	Medium
260 262	Acrelane –rock outcrop complex very stony sandy loam	10-20	Very Low	Moderate	Rapid
370	Lemm very gravelly coarse sandy loam	> 60	Low	Moderately Rapid	Slow
613	Verdico extremely stony sandy loam	20-40	Low	Very Slow	Medium
652	Chalco stony loam	10-20	Very Low	Very Slow	Medium
654	Chalco-Celeton Variant complex cobbly, sandy loam	10-20	Very Low	Very Slow	Medium
683	Reno stony sandy loam	20-40	Very Low	Very Slow	Slow
731	Stodick stony loam	14-20	Very Low	Very Slow	Rapid
961	Kayo stony sandy loam	> 60	Low	Moderately Rapid	Slow
974	Aladshi gravelly sandy loam	> 60	Moderate	Moderately Slow	Slow
994	Badland-Chalco-Verdico complex very stony clay loam	10-20	Very Low	Very Slow	Medium
1170	Wedertz sandy loam	> 60	Moderate	Moderately Slow	Slow
1172	Wedertz sand	> 60	Moderate	Moderately Slow	Slow
1191	Spasprey sandy loam	20-30	Very Low	Moderately Slow	Slow

Source: USDA 1983; 1993.

SOIL EROSION HAZARD

The rate of erosion (undisturbed soil conditions) is dependent primarily on slope, soil surface texture, and soil surface cover. The NRCS rates the suitability of in-situ soil for the potential erosion hazards of water and wind. NRCS erosion hazard ratings for soil in the Project area are summarized in **Table 3-15.**

The hazard of water erosion is slight to moderate within the Project area, primarily due to soil surface texture, soil surface rock fragment cover, and gentle to moderately steep slopes. The Acrelane and Stodick soil are the exceptions within the Project area due to very steep slopes encountered on alluvial fans and pediments. These units exhibit high water erosion potential. The "K" Factor evaluates the influence of soil texture, structure, and permeability with regards to water erosion. These soil characteristics affect the ability of water to move soil particles (motility) and the ability of water to infiltrate the soil profile.

Wind erosion hazard is slight to moderate, primarily due to occurrence of surface rock fragments and soil surface texture that is not susceptible to blowing. The exceptions are the Haybourne and Wedertz soil that exhibit sandy surface textures susceptible to transport by wind.

TABLE 3-15
Soil Erosion Hazard Potential
Reno Clay Plant Project

Soil Series	Water Erosion Hazard	Wind Erosion Hazard	Washoe County South Part Soil Survey	
			K[1]	T[2]
Aquinas	Slight-Moderate	Slight	0.28	3
Haybourne	Slight	Moderate	0.15	5
Indian Creek	Slight	Slight	0.24	1
Lupino	Slight	Slight	0.24	1
Acrelane	High	Slight	0.17	1
Lemm	Slight	Slight	0.17	5
Verdico	Moderate	Slight	0.28	2
Chalco	Slight	Slight	0.28	1
Celeton Variant	Slight	Slight	0.32	1
Reno	Slight	Slight	0.17	2
Stodick	High	Slight	0.32	2
Kayo	Slight	Slight	0.17	5
Aladshi	Slight	Slight	0.24	5
Wedertz	Slight	Slight-High	0.10-0.17	5
Spasprey	Slight	Moderate	0.15	3

[1/] Soil Erodibility Factor: A quantitative measure, experimentally determined of the susceptibility of a soil for particle detachment and transport by rainfall.

[2/] Soil Loss Tolerance: The maximum rate of soil erosion that will permit a high level of vegetative productivity to be sustained. The units of "T" are Tons/Acre/Year

Source: USDA 1983

VEGETATION RESOURCES

Hungry Valley is a relatively flat valley bounded by low hills (Hungry Mountain to the west, Hungry Ridge to the east) with elevations ranging from approximately 4,900 - 5,200 feet AMSL. Soil, typical of alluvial deposits and terraces in the area, is stony and sandy with little topsoil development. Precipitation is less than 8 inches per year with surface water only occurring during and immediately after major precipitation events. The combination of these environmental conditions along with a short growing season, severely limits plant community development.

Vegetation of Hungry Valley is typical shrub-steppe of the Basin and Range Physiographic Province. The area supports shrubs and bunchgrasses of varying densities. Generally low stature vegetation is interspersed with patches of bare soil. Overall vegetative cover is low, ranging from 16 to 28 percent in proposed disturbance areas (North and South Mine Areas and Processing Facility Area) and slightly higher in adjacent undisturbed areas (EMA 2000c). Much of the area burned in July, 2000, and now contains little or no vegetation cover. Distribution of vegetation communities, general study area, and vegetation transect locations are shown in **Figure 3-10.**

Four shrub communities exist within the Project area. Big basin sagebrush and Douglas rabbitbrush communities are most prevalent; low sagebrush and greasewood communities are present to a lesser degree. The low sagebrush, and greasewood communities are relatively infrequent and therefore not discussed further in this document.

The big basin sagebrush community dominates the Processing Facility and South Mine areas. These areas have a vegetative cover of 16.5 and 15.7 percent, respectively. Shrubs are the dominant life form contributing 43 and 30 percent of the vegetative cover, respectively. Associated shrubs are Mormon tea, rabbitbrush, four-wing saltbush and spiny hop-sage (EMA 2000c). Grasses and forbs are smaller components. Common native species are bottlebrush squirreltail, Indian ricegrass. Cheatgrass, an invasive exotic grass, is very prevalent in both areas and could increase as a result of recent fires.

A Douglas rabbitbrush community dominates the North Mine Area. Total vegetative cover is 23 percent with shrubs occurring most frequently. Associated shrub species are shadscale, four-wing saltbush, rabbitbrush and spiny hopsage. Native grasses present are Indian ricegrass, bottlebrush squirreltail and an unknown Poa species (EMA 2000c). Sandwort was a minor component. Cheatgrass is also abundant contributing 57 percent of vegetative cover.

Utah juniper occurs sporadically throughout the area, though most frequently at higher elevations. Scattered junipers are most abundant in the Processing Facility Area; uncommon in the South Mine Area and absent from the North Mine Area.

There are no riparian or wetland vegetation communities in the Project area. One ephemeral stream channel exists within the Project area. Though the associated plant community is not supported by water and is indistinct from the surrounding vegetation (EMA 2000d). This drainage lacks the interstate commerce nexus and is therefore non-jurisdictional and not subject to 404 permitting or regulation.

NOXIOUS WEEDS

Based on noxious weed inventories in the area, no weed species listed by BLM or identified on the Nevada Noxious Weeds list occur within the proposed disturbance areas (EMA 2000c). Cheatgrass however, occurs throughout the Project area as well as in adjacent undisturbed areas.

RANGE RESOURCES

The Project area lies within the Paiute Grazing Allotment administered by BLM. The allotment consists of several pastures, two of which occur in proposed disturbance areas. Portions of the North Mine Area are located in the Hungry Valley and Shovel Springs pastures. The South Mine Area is located entirely within the Shovel Springs pasture. Range improvements and projects in the area are shown in **Table 3-16** and in **Figure 3-11.**

Cattle (cow/calf pairs) are rotated over the two pastures according to the following schedule.

TABLE 3-16
Range Improvement Projects Within or Adjacent to the Project Area

Project Number	Project Name	Location
546319	Hungry Valley Fence	T22N, R20E; Sec 31, 32, 33
544005	Hungry Valley Well	T21N, R20E; Sec 8
540354	Shovel Spring Pipeline (abandoned)	T21N, R20E; Sec 18, 19, 30

Source: ERM 2000b.

The Shovel Springs pasture normally supports 1,084 animal unit months (AUMs) from April 1 through June 5 for year one and May 22 through July 25 for year two. The Hungry Valley pasture normally has 838 AUMs from June 6 through July 25 for year one and April 1 through May 21 during year two. However, due to fires in 1999 and 2000, the Shovel Springs pasture will be closed to grazing until the fall of 2002. The Hungry Valley pasture, which burned in 2000, will be closed for two growing seasons.

WILDLIFE RESOURCES

HABITAT

As described in the Vegetation Resources section, vegetative communities that provide wildlife habitat in the area are dominated by low-to-moderate growing shrubs interspersed with native bunchgrasses. Shrubs are primarily Great Basin big sagebrush, low sagebrush, and Douglas rabbitbrush. Native perennial grasses consist of Indian ricegrass and bottlebrush squirreltail. Some portions in the Project area have burned within the last thirty years and are now dominated by shadscale and cheatgrass. A few locales within the Project area exhibit scattered Utah juniper. Other than low juniper there are no trees in the vicinity. Refer to *Vegetation* in this Chapter for a discussion of vegetation communities in the Project area.

Low rock outcrops are present in the northern part of the Project area, but no cliffs (greater than 30-feet in height) or large rock outcrops occur.

MAMMALS

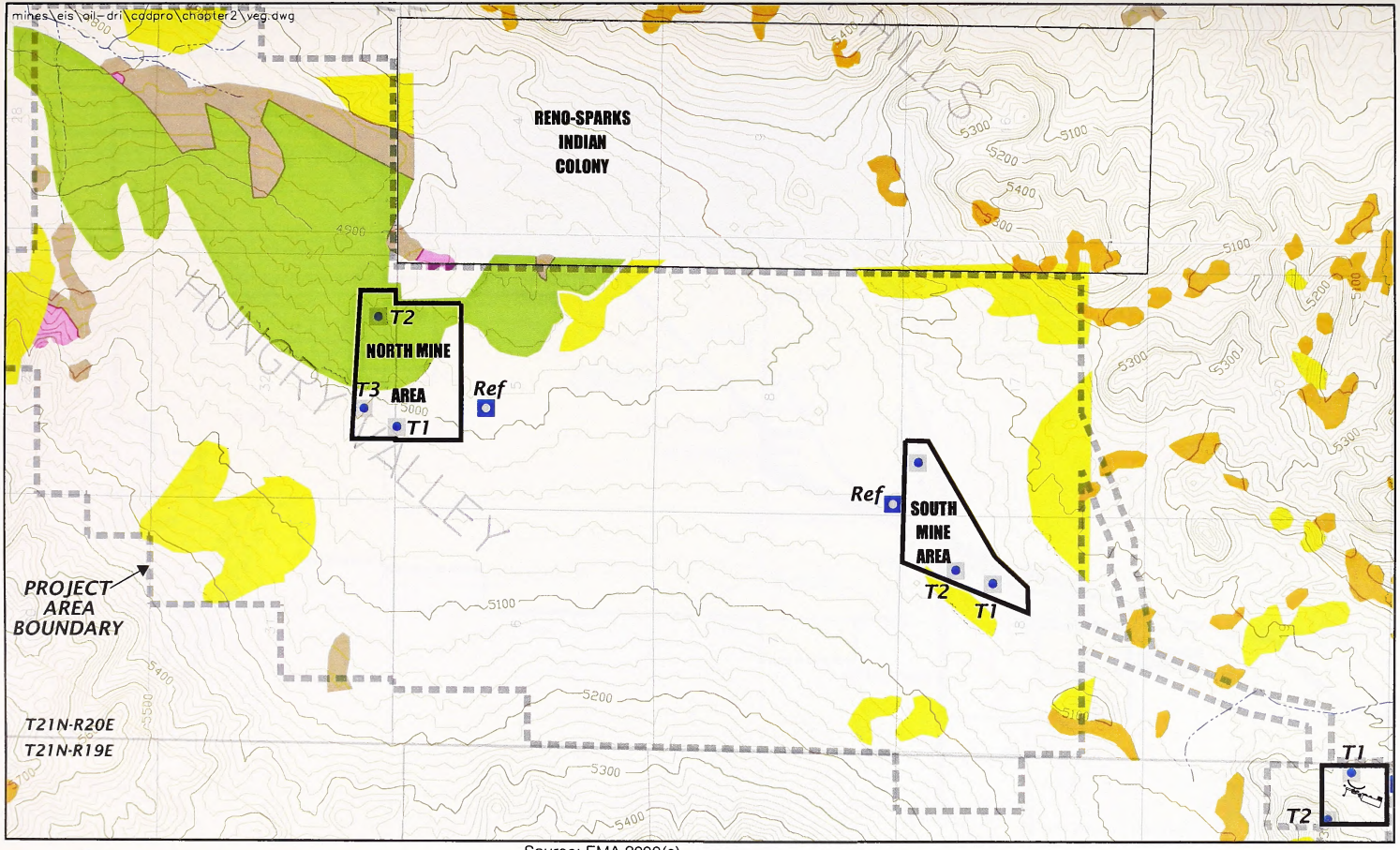
No evidence of mule deer, pronghorn, or wild horses was recorded during a wildlife reconnaissance survey conducted in January 2000. There are no known mule deer or pronghorn migration routes in the Project area. Mule deer and pronghorn may occasionally be found in small numbers throughout the area, but there are no important seasonal uses of the Project area by these species (Brigham 2000).

Mammalian predators that may occur in the area include coyote, kit fox, bobcat, badger, and long-tailed weasel. Coyote scat was observed in the Project area during the wildlife survey conducted in January 2000.

Black-tailed jackrabbits were the most common small mammal species recorded in the Project area during surveys conducted in January 2000. Other small mammal species that may be expected to occur in the area include desert cottontail, Townsend's ground squirrel, white-tailed antelope squirrel, least chipmunk, pocket mouse, kangaroo mouse, kangaroo rat, northern grasshopper mouse, deer mouse, woodrat, and sagebrush vole.

BIRDS

Several raptor species, including golden eagle, red-tailed hawk, Swainson's hawk, and bald eagle may seasonally forage in the Project area. A pair of golden eagles was observed in flight near the Reno-Sparks Indian Colony in March 2000. In April 2000, a single adult was observed foraging and later perching along Hungry Ridge (BLM 2000). A golden eagle nest has been recorded by NDOW approximately one mile east of the Project area (NDOW 1999). No raptor nests were found, nor was whitewash observed on rock outcrops in the Project area during January 2000 baseline wildlife surveys.



Source: EMA 2000(c)

March 2001

N

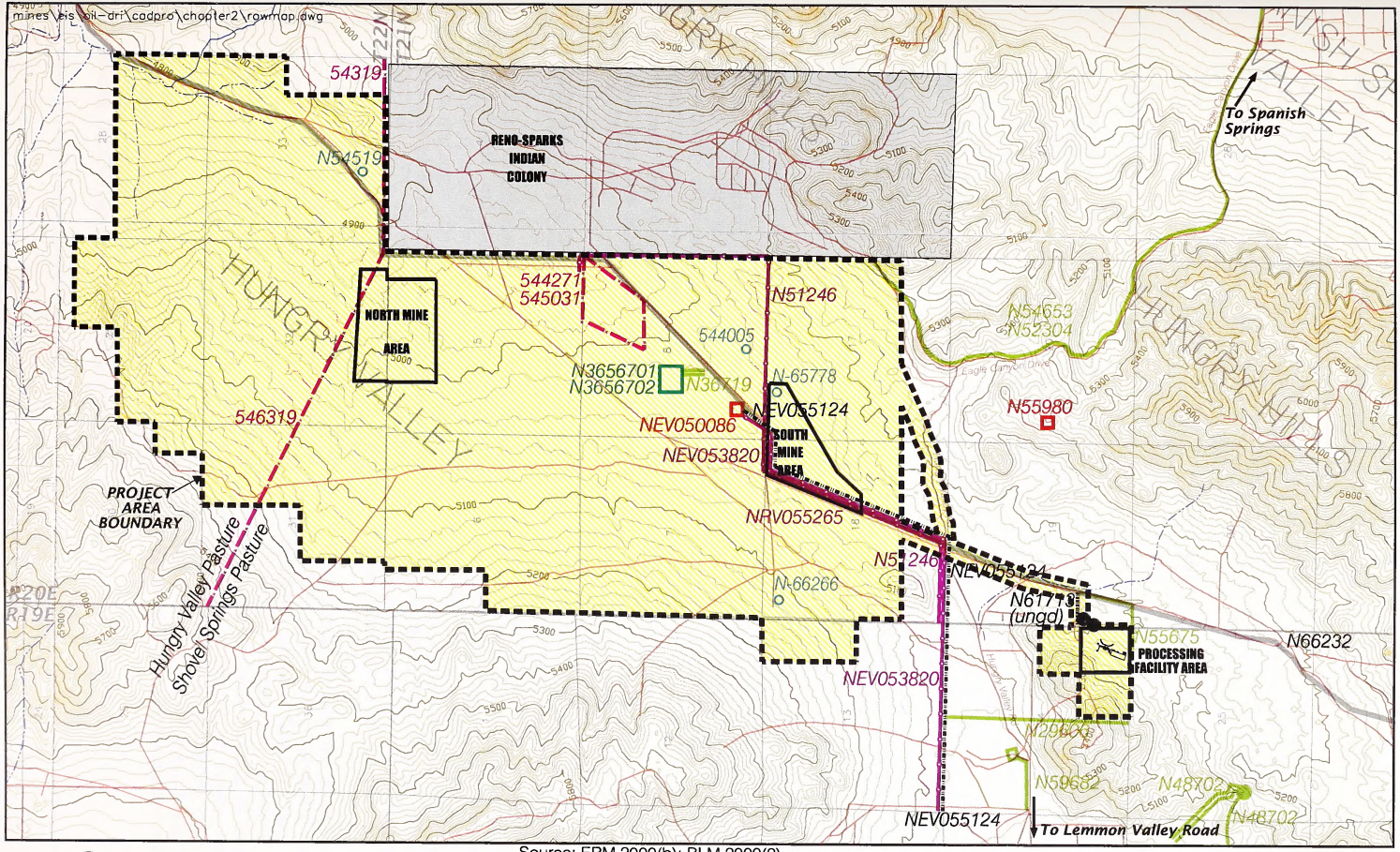
0 Feet 3000

- Grassland
- Sagebrush
- Black Greasewood Community
- Sagebrush/Perennial Grasses
- Barren (<5% Vegetation Cover)
- Douglas Rabbitbrush Community

T1 Transect Locations and I.D. Number

Reference Transect Location

Vegetation Communities and Transect Locations
Reno Clay Plant Projects
Reno, Nevada
FIGURE 3-10



Source: ERM 2000(b); BLM 2000(2)

March 2001

N

0 Feet 4000

NEV05050 Serial Number (See Table 3-18)

Roads

Power

Recreation

Fence

Telephone/Telegraph

Tuscarora Pipeline

RAWS (Weather Station)

Communications Features

Stock Well/Monitoring Well

Existing Road

Creek/Drainage

Land Use and Rights-of-Way
Reno Clay Plant Project
Reno, Nevada
FIGURE 3-11

The Project area was historically used by sage grouse but is no longer occupied due to sparse forb component and poor quality habitat (EMA 2000e). No other upland game birds are known to occupy the Project area (Brigham 2000). Other birds commonly occurring in the area include Western meadowlarks, black-billed magpies, horned larks, California quail, sage sparrows, and loggerhead shrikes.

Surface water in the area is limited to runoff in ephemeral drainages after significant precipitation events. The nearest open surface water is Swan Lake in the Lemmon Valley, approximately three miles southwest of the Project area (EMA 2000e). No waterfowl or shorebirds are expected to occur in the Project area.

REPTILES AND AMPHIBIANS

Several species of snakes could be expected to occur in the project area. These include the Great Basin gopher snake (documented in the nearby Hungry Range), Mojave patch-nosed snake, Great Basin rattlesnake, red racer, and western long-nosed snake. Potential lizard species include long-nosed leopard lizard, zebra-tailed, northern side-blotched, northern sagebrush lizard, and Great Basin whiptail. No amphibians are expected to occur within the project area due to the lack of surface water (EMA 2000e).

SPECIAL STATUS SPECIES

Plant and animal species in need of additional management and protection, due to declining numbers or loss of habitat, are termed "*special status species.*" These species are afforded protection either by the Endangered Species Act (ESA) of 1973, as amended; BLM "Sensitive" status pursuant to BLM Manual 6800 et seq.; and the Nevada State Protected Animal List (NAC 501.100 – 503.104) which has been incorporated by BLM into the "sensitive" list. Species of *concern* are not specifically afforded the same protection under the ESA as threatened or endangered species, but federal agencies are required to consider their status in the planning and decision making process.

Nineteen special status species have been identified collectively by the Nevada Natural Heritage Program (NNHP), Nevada Division of Wildlife (NDOW) and the USFWS as potentially having habitat in the Project area. There were none of these species recorded in the proposed disturbance areas during the wildlife survey conducted in January 2000.

WILDLIFE

There are no state or federally threatened, endangered, proposed, or candidate species known to occur within the Project area other than the bald eagle. Bald eagles are occasional winter visitors to Swan Lake and the Lemmon Valley marsh (NDOW 1999). It is unlikely they forage in the Project area due to lack of prey and roosting habitat. Two special status species that have habitat in the Project area are the pygmy rabbit and the Western burrowing owl. Neither of these species have been documented in the Project area. The pygmy rabbit occurs in dense sagebrush habitat. The Western burrowing owl occurs in open desert habitat in association with burrowing animals and has been documented in 'thriving colonies' along the southern end of the Stead facility runway and adjacent areas west of Lemmon Valley (NDOW 1999). It is unlikely that any of the eight bat species listed by the USFWS would occur in the Project area due to lack of water and roosting habitat or cave features.

VEGETATION

The occurrence and distribution of endangered, threatened, rare and sensitive plant species is documented by two organizations. The Nevada Natural Heritage Program (NNHP) maintains a computerized inventory of general location and status of rare plant species. The NNHP follows state and federally protected species as well as species the scientific community considers deserving of official listing. The Northern Nevada Native Plant Society (NNNPS) advises state and federal agencies regarding Nevada native plants and their distributions.

The potential for sensitive plants to occur in the Project area was determined by evaluating suitable habitat features and examining occurrence records from the NNHP. The NNHP has identified 29 rare plants in Washoe County most of which occur within habitats and communities or at elevations other than those present in the Project area. **Table 3-17** lists six species with potential habitat in the Project area.

TABLE 3-17
Rare Species with Potential Habitat Within Reno Clay Plant Project Area

Species Name				
Scientific	**Common**	**Status State[1]/BLM[2]**	**Elevation (feet)**	**Habitat**
Astragalus ulsiferae Var. pulsiferae	Pulsifer's milkvetch	S1/S	4,160 to 5,280	Sandy or rocky soil, often with pines or sagebrush
Eriogonum robustum	altered andesite buckwheat	S2S3/S	4,300 to 5,600	Barren altered andesite slopes
Ivesia aperta	Sierra valley ivesia	S1/S	4,800 to 7,360	Dry, rocky meadows, volcanic soils
Ivesia webberi	webber's ivesia	S2/S	4,800 to 6080	Rocky clay in sagebrush flats
Oryctes nevadensis	Nevada Orcytes	S2S3/S	3,900 to 4,400	Sandy slopes, foothills, and dunes
Polyctenium williamsiae	William's combsleaf	S2/PS	3,200 to 6,400	Playas, wet meadows

[1] Nevada Natural Heritage Program Status: S1=critically imperiled due to extreme rarity, imminent threats and/or biological factors; S2=imperiled due to rarity and/or other demonstrable factors; S3=rare and local throughout its range or with very restricted range, or otherwise vulnerable to extinction.

[2] BLM status: S=sensitive; PS=proposed sensitive

Source: EMA 2000c.

LAND USE AND ACCESS

The majority of Hungry Valley, including the proposed mine areas, is public land administered by BLM. Oil-Dri holds mining claims on approximately 5,827 acres in the Hungry Valley.

Most of Hungry Valley is located in the Washoe County Warm Springs Planning Area. The Warm Springs Planning area, encompasses approximately 290 square miles about 20 miles north of the City of Sparks along the Pyramid Lake Highway. The planning area includes the Warm Springs Valley Hydrographic basin, which extends into Hungry Valley. The Warm Springs Planning Area is sparsely populated, with about six percent of available land in the planning unit developed. Most development consists of residential dwellings on large lots (Washoe County, 1999a). Although the Warm Springs Planning Area is located adjacent to a region of Washoe County characterized by growth and development, the portion encompassing the Project area is largely uninhabited.

The Spanish Springs Planning Area includes suburban development east of the Project area along the Pyramid Highway in the Spanish Springs Valley. According to the Spanish Springs Area Comprehensive Plan (Washoe County, 1999b), land use on either side of Eagle Canyon Drive, which provides access to the Project area from the east, is designated as medium density suburban. Approximately 70 per cent of employees would use Eagle Canyon Drive to access the Project area. In addition, an amendment to the Spanish Springs Area Plan was approved by Washoe County to accommodate development of 133 residences on the north side of Eagle Canyon Drive, west of the new middle school (Washoe County, 1999b). Although most of this planning area is currently undeveloped or agricultural, land on the east side of the Pyramid Highway north of Spanish Springs Road is comprised predominantly of low-density suburban and low-density rural development. Based on projections by the Washoe County Department of Community Development, the growth rate in the Spanish Springs planning area is estimated at approximately six percent per year (Washoe County, 1999b).

The Lemmon Valley area, southwest of the Project area, is in the North Valleys Comprehensive Planning Area. Approximately 30 per cent of employees accessing the Processing Facility would use Lemmon Valley Road north from U.S. Highway 395 to Chickadee Drive. Land use along this portion of the study area consists of low- and medium-density suburban development, medium- and low-density rural, some industrial, general commercial, and undeveloped land. Relative to other planning areas within Washoe County, the North Valleys Planning Area is a region of slow growth (Washoe County, 1999c). The prospect for additional suburban development in the North Valleys is limited by the fact that groundwater resources in the planning area are totally appropriated (Washoe County, 1999c). Any proposed subdivisions would need to obtain existing water rights from elsewhere or secure rights to conservation surpluses in order to be approved.

Land use authorizations, rights-of-way, or other improvements in the vicinity of the Project area are listed in **Table 3-18** and are shown on **Figure 3-11.**. These include roads, a power distribution right-of-way, developed water facilities and wells, various range improvements, communication lines and associated facilities, and a Recreation and Public Purpose (R&PP) lease.

LAND OWNERSHIP

Most of the land within the geographical boundaries of the Hungry Valley, including the North and South Mine areas and the Main Haul Road is administered by BLM.

The south and west side of Hungry Valley near the Project area, was subjected to wildfire damage in 1999 and 2000. Since that time, grazing allotments have been re-distributed and organized recreational activities have been relocated to accommodate revegetation of the area.

The Reno-Sparks Indian Colony administers 1,949 acres adjacent to the east boundary of the Project area (T21N, R20E, Sections 4, 9, and 16). The Colony consists of approximately 150 single-family dwelling units. Other improvements at the Reno-Sparks Indian Colony include a water distribution system, sewage collection and treatment system, community center, tribal cemetery, baseball field, daycare center, and an improved playground and landscaping. Residents of the Reno-Sparks Indian Colony also comprise part of the recreational user base of the Hungry Valley (Nevada-Sierra Planners 2000a).

ACCESS

Principal access routes to the Project area and Hungry Valley are Eagle Canyon Drive from the east and Chickadee Drive from the west. Eagle Canyon Drive is accessed from the Pyramid Highway (U.S. Highway 445), a major arterial linking Spanish Springs to the Reno/Sparks area. From Pyramid Highway to the new high school, Eagle Canyon Drive is a two and four-lane minor arterial that accommodates approximately 3,700 vehicles per day (Solaegui Engineers, Ltd. 2000). From the high school west to the Reno-Sparks Indian Colony, Eagle Canyon Drive is classified as an undivided two-lane collector that accommodates approximately 600 vehicles per day (Solaegui Engineers, Ltd. 2000). Eagle Canyon Drive is the primary access route to the Reno-Sparks Indian Colony. Under the Proposed Action, Oil-Dri would use this route to ship finished product by tractor/trailer trucks. About 15 round-trips per day, six days per week would be required to ship finished product during initial stages of the project. Up to 23 trips per day are estimated to occur when the facility reaches full production.

Approximately 70 percent of the employees would use the Eagle Canyon Drive access route comprising up to 70 round trips per day. Oil-Dri proposes to upgrade Eagle Canyon Drive to include paved acceleration and deceleration lanes and graded shoulders in the westerly segments of the road. An extension from Hungry Valley Road would be developed to provide direct access to the Project area.

TABLE 3-18
Rights-of-Way Within or Adjacent to the Project Area

Serial Number	Rights-of-Way	Location	Dimensions (ft)	
			Length	Width
N54519	Well Site	T22N, R20E; Sec 33	50	50
N54519	Water Line	T22N, R20E; Sec 33	800	30
N51246	Power Transmission Line	T21N, R20E; Sec 17,18	5,416	25
N055265	Communication Site	T21N, R19E; Sec 13 T21N, R20E; Sec 8, 18	—	—
N36567	R&PP Lease	T21N, R20E; Sec 8	—	—
N36719	Road	T21N, R20E; Sec 8	330	25
NEV050086	Other Federal (Aviation)	T21N, R20E; Sec 8	125	100
NVN29606	Calibration Site & Access Road Access Road	T21N, R19E; Sec 24	200 1,039 633	200 30 60
NEV053820	Power Transmission Line	T21N, R20E; Sec 8, 18, 19	15,407	100
N4170	Material Site	T21N, R19E; Sec 13	2,640	5,280
N059682	Road	T21N, R19E; Sec 24	3,010	25
N065778	Water Facilities (3 sites; 100 x 100 each)	T21N, R19E; Sec 18	300	300
N55980	RAWS (weather station)	T21N, R20E; Sec 20	10	10
N61713	Underground Telephone/Telegraph Line	T21N, R20E; Sec 19	96	10
N50086	Communication Site	T21N, R20E; Sec 8	125	100
NEV055124	Telephone/Telegraph Line	T21N, R20E; Sec 8, 18	15,470	40
N55675	Road	T21N, R19E; Sec 25 T21N, R20E; Sec 19, 30	6,200	25
N52304	Road (Eagle Canyon)	T21N, R20E; Sec 17, 20, 28, 29	20,597	Variable
N66266	Exploratory Wells	T21N, R20E; Sec. 18	–	–
N65778	Washoe Co. Monitoring Wells	T21N, R20E; Sec 17	–	–
N54653	Telephone/Telegraph Line	T21N, R20E; Sec 17, 20, 28, 29	20,580	20
N66232	Tuscarora Pipeline	T21N, R19E; Sec 25, 36 T21N,R20E; Sec 30, 19, 18, 8, 5, 33, 28	50,000	50

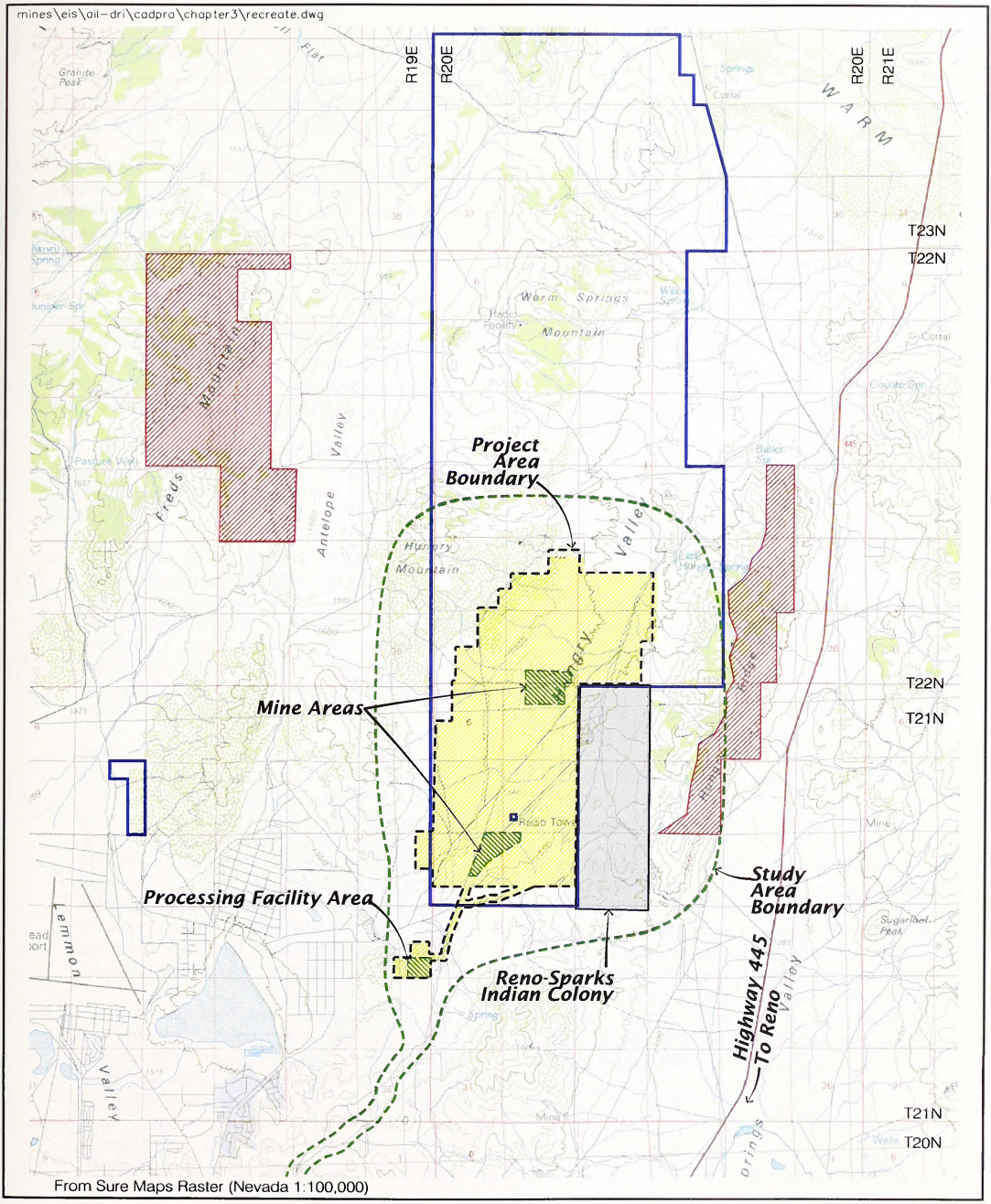
Source: ERM 2000b.

The secondary route to the Project area for employees would be from Lemmon Drive to Chickadee Drive. Lemmon Drive is accessed from U.S. Highway 395 and is a two and four lane major arterial. Average daily traffic volume on Lemmon Drive is heaviest between U.S. Highway 395 and Military Road, with approximately 15,300 vehicles per day. The traffic volume decreases as Lemmon Drive continues north. Chickadee Drive is a two lane collector street that heads east to Hungry Valley Road and the intersection with the Main Haul Road, thence south to the Processing Facility or north to the mine areas. Oil-Dri estimates 30 percent of employees would use this route as access to the Project area. Under the Proposed Action, new road construction would not be required along this route and Oil-Dri would maintain this route from Chickadee Drive to the Processing Facility and mine areas during the life of the Project. This route would not be used for transport of finished product. A small number of residential lots front on Chickadee Drive, which becomes a dirt road east of Fir Drive as it enters the Hungry Valley. Average daily traffic volume on Chickadee Drive is reported as 276 vehicles per day (Solaegui Engineers, Ltd. 2000).

RECREATION

The study area for recreation consists of the public and private land potentially affected by the proposed Project in Hungry Valley **Figure 3-12**. The area includes public land managed by BLM, the Reno-Sparks Indian Colony and private residences.

The Carson City Field Office manages public land in Hungry Valley, including 305 acres that would be disturbed by the Proposed Action and approximately 5,827 acres of mining claims surrounding the Project area that are controlled by Oil-Dri. These areas are frequently used for organized and dispersed recreational activities and events and provide open space for diverse recreational activities such as hunting, hiking,



March 2001

N

0 Feet 10,000

Off Highway Vehicle Open Area

Off Highway Vehicle Closed Area

Study Area Boundary

Recreation Map
Reno Clay Plant Project
Reno, Nevada
FIGURE 3-12

mountain biking, cross-country skiing, horseback riding, and off-highway vehicle (OHV) use.

The valley is designated open for OHV use. However, most OHV use is on existing roads and trails in the valley, and BLM coordinates organized group events to minimize conflicts between users.

Organized events on public land require coordination with the BLM and the issuance of an event-specific permit. Therefore, location and timing of events is often planned to minimize user conflict and to manage impact of those activities on the environment.

The following organized recreational activities occur within the Hungry Valley, either within the proposed Project area or in the vicinity (Hull 2000):

- The Reno Radio Control Model Airplane Club leases approximately 10 acres within the proposed Project area. Land used by Reno Radio Control is located east of the main haul road between the North and South Mine areas and is set aside under a Recreation and Public Purposes (R & PP) lease.

- Motorcycle races occur approximately four to five times per year in the Project area. Start areas for races are generally on the west side of Hungry Valley, although races were moved this year due to reseeding of portions of the valley that burned last year. Race events are generally restricted to existing roads and trails in the Project area, including some that would cross the proposed haul road between the North Mine Area and the Processing Facility.

- Hunting dog field trials occur within the Project area. These events typically begin near the North Mine Area and proceed north down the valley. Approximately 20 to over 100 participants compete at the field trials. Dog trials require large tracts of unobstructed land, and participants use horses to cover the distances with the dogs.

- Equestrian events in the vicinity of the Proposed Action include endurance races and pleasure riding. There are usually two or three organized endurance races each year. The races typically start at Chickadee Drive on the west side of the valley or northeast of the Project area near Winnemucca Ranch Road. These events cover 100 miles, and include portions of the Project area.

- "Coyote chases" are another dog sporting activity that occurs in the Project area. Coyote chases also require large open areas where participants run little risk of conflicting with other activities; particularly motorized sports. The coyote chases generally begin directly west of the proposed haul road and west of the Reno Radio Control R&PP lease, although the activity can occur anywhere in the valley. Organized coyote chasing may include over 100 participants with horses and dogs.

- The Boy Scouts of America hold "jamborees" in Hungry Valley once a year. The jamborees involve from 80 to over 200 boy scouts and adult supervisors. The jamborees are usually held on the flanks of the valley floor rather than in the immediate vicinity of the Proposed Action.

- During the month of August the Reno Rodeo Cattle Drive goes from Susanville, CA through Hungry Valley to Reno.

Other diverse recreational activities occurring in the Project area include target shooting, hunting, mountain biking, and hiking. Mountain biking, hiking, and other non-motorized activities are generally limited to existing roads and trails in Hungry Valley. Recreational shooting occurs at random locations and is not specifically restricted. Other users of the area must be vigilant in areas used for target and skeet shooting (Hull 2000).

CULTURAL RESOURCES

The cultural resource component of the environment is defined here to include several classes of properties. Each class is described briefly, and its legislative authority is cited.

- Properties listed on or eligible to the National Register of Historic Places (National Historic Preservation Act [NHPA]). Historic properties may include sites, buildings, structures, objects, districts, traditional cultural properties, or landscapes that are prehistoric or historic in age, or that relate to an ethnographic group.

- Archaeological sites (Archaeological Resources Protection Act [ARPA], Archaeological Data Protection Act [ADPA]). ARPA states that excavation of archaeological data cannot occur prior to the issuance of a permit. ADPA requires agencies to report impacts projects may have on archaeological, historical, and scientific data, and that they recover such data.

- Native American religious practices and spiritual places (American Indian Religious Freedom Act and Executive Order 13007). EO 13007 requires federal agencies to accommodate access to sacred sites by Native American religious practitioners, to avoid adverse effects to such sites, and to maintain site information in confidence.

- Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony (Native American Grave Protection and Repatriation Act). Consultation with lineal descendants and traditional religious leaders is required prior to disposition or repatriation of human remains, funerary and sacred objects, and objects of cultural patrimony.

CULTURAL RESOURCE BACKGROUND DATA

Prehistoric Background

Pendleton et al. (1982) and Elston (1982, 1986) provide summaries of western Great Basin and eastern Sierra prehistory. These studies focus on adaptive strategies consisting of technological, subsistence, settlement, and ideological elements expressed over broad regions. Four strategies are recognized for the Western Great Basin: the Pre-Archaic (prior to 7000 years Before Present (B.P)), the Early Archaic (7,000 to 4,000 B.P.), the Middle Archaic (4,000 to 1,500 B.P.), and the Late Archaic (1,500 B.P. to historic contact).

The Pre-Archaic strategy prevailed in the Great Basin from about 11,500 to 7,000 B.P., a period marked by cool, moist conditions. Originally thought to represent an adaptation to pluvial lakeshore environments, Pre-Archaic sites have increasingly been recognized in riverine and upland settings. Subsistence revolved around lakeshore-marsh resources and the taking of large game; the use of processed seeds and nuts was not prevalent. Population density was quite low, and groups were highly mobile.

Environmental conditions changed toward the end of the pre-Archaic period; temperatures increased, moisture patterns changed, and the amount of surface water decreased. These changes caused a shift in adaptive strategy. Early Archaic patterns are markedly different from those of the pre-Archaic period. Seed processing tools became common, while hunting remained a prevalent activity. The variety of site types increases during this period, suggesting the diversity of resource procurement strategy. Initially, population density was lower than during the pre-Archaic, but gradually increased.

At the onset of the Middle Archaic, environmental conditions again changed. Most notably, increases in effective precipitation caused expansion of resources associated with lakes and marshes. Population increased, and pronounced cultural elaboration occurred, as evidenced by an abundance of textiles and other perishables, and more elaborate houses. Subsistence practices continued to emphasize large game hunting, but use of seed expanded. Also, use of upland resources increased notably.

Technologically, the Late Archaic saw a diversification in types of ground stone implements used, introduction of the bow and arrow, and a greater emphasis on use of small flake tools. Subsistence and settlement changes reflected an increased local and regional population. This prompted an intensification and diversification in

subsistence practices not noted previously. Low-ranked resources seldom used during earlier periods were added to the diet. Use of pinyon also became pronounced during this period. This period is thought to represent populations ancestral to the Washoe and Paiute.

Ethnographic Background

Ethnographic information indicates that Northern Paiute and Washoe occupied the study area. Neither group was exclusionary and allowed others to harvest resources in their use areas. There was little visitation of the Truckee Meadows by groups to the west (the Nisenan and Maidu, primarily). Those groups traded with the Washoe and Paiute but seldom left their home territories (Riddell 1978; Wilson and Towne 1978).

The Northern Paiute

The Northern Paiute are a Uto-Aztecan speaking group that ranged over western Nevada and the Owens Valley portion of eastern California. Stewart (1939) recognized several local Northern Paiute bands. Two such groups made use of the study area (Johnson 1975, Parks 1938, Stewart 1939). *Tasiget Tuviwarai* settlement focused on the Winnemucca and Spanish Springs valleys and lower Truckee Meadows. The *Kuyuidokado* occupied the area to the east, including all of Pyramid Lake and the lower Truckee River.

The Northern Paiute were semi-nomadic, moving between environmental zones to take advantage of resources as they became available. Movement occurred laterally, from one valley to another, and elevationally, moving up the valley edges. Lifeways varied according to type and abundance of resources available within a group's territory. In some areas, subsistence revolved around lacustrine resources and a semi-sedentary settlement pattern was possible. In most areas resources were more dispersed and settlement was less sedentary.

The annual round was somewhat consistent from group to group (see Johnson 1975, and Fowler and Liljeblad 1986). Winters were spent in multi-family villages comprised of three to ten houses. Winter houses included a conical pole framework built around a shallow depression and covered with tule mats. During spring and summer, small groups moved away from the winter village. They roamed widely residing in camps located near resource concentrations. Plants provided most of their subsistence. In some locations, fishing was of importance. Later in the fall, some groups traveled to areas where pine nuts could be collected. Fall also was the preferred hunting season. Mountain sheep and deer were hunted and antelope where taken by means of communal drives. With onset of winter, groups once again congregated and lived off of stores assembled over the summer and fall.

Northern Paiute social organization was structured around two groupings. The first was the extended family, which functioned alone for much of the year. The second was larger band settlements that were fluid in size and composition. Such settlements formed for communal activities such as spring fish runs, summer caterpillar harvests, fall pine nut harvests, and fall rabbit drives. It was common for several family units to winter together.

The Washoe

The Washoe, a Hokan-speaking hunting and gathering group, inhabited the chain of valleys along the eastern slope of the Sierra Nevada, from Honey Lake to Antelope Valley (Downs 1961; Price 1963). The Pine Nut Mountains and the Virginia Range formed the eastern boundary of Washoe territory, while the western boundary extended beyond the Sierra crest.

Washoe territory tended to be well watered, allowing for a more consistent subsistence and settlement pattern. Washoe subsistence still involved seasonal shifts in resource selection and concomitant settlement location. With the coming of spring, small bands or individual families left their winter base camps to take advantage of ripening plant foods in low-lying valleys. As soon as the snow melted, people began moving to higher elevations in the Sierra Nevada. By early June, most Washoe were at Lake Tahoe encampments, there to take trout, sucker, and whitefish spawning in the streams emptying into the lake (Downs 1961). Stores of dried fish were developed for later use.

In the late summer and early fall, Washoe left Lake Tahoe and dispersed in small groups to the valleys east of the Sierra. Antelope and rabbit were hunted in early fall, both by individuals and in communal drives. Rabbits were dried for winter use. During late fall, the Washoe collected pine

nuts along the eastern face of the Sierra and in the Pine Nut Hills; deer hunting was an important ancillary activity in these locations. With onset of heavy winter storms, Washoe families returned to their favored base camps located along the Carson and Truckee rivers. There, they subsisted on stored pine nuts, seeds, and dried meat (Downs 1961).

The basic Washoe social and economic unit was a household composed of a married couple, their dependent children, and one or more relatives or close friends (Price 1963; Downs 1961). Each household occupied a *galis dangal*, or winter house, that was four to five meters in diameter, had an east facing doorway, and central hearth. A winter base camp contained two to ten such houses.

Historic Background

The first Euro-Americans to arrive in Northwest Nevada were fur trappers who sporadically passed through the area during the 1820s and 1830s. By the mid-1840s, emigrants were seeking routes through the region on their way to Oregon. With the 1849 discovery of gold in California, these early routes became major corridors. For the next decade, tens of thousands passed through Truckee Meadows each year on their way to California. In 1851, James Beckworth pioneered a trans-Sierran route that extended north from Truckee Meadows along what is now US Highway 395. With discovery of silver on the Comstock in 1859, many people came back through Truckee Meadows from California. This continued until 1869 when the transcontinental railroad was completed. Construction of the Virginia and Truckee Railroad and the Nevada-California-Oregon Railroad enhanced Reno's role as a major regional transportation hub.

Agricultural activities began in Truckee Meadows during the 1850s. Cutting of native grasses was the primary activity through the mid-1860s. With the advent of the railroad, the area became an important regional center for feeding of livestock during winter and spring. This increased the need for forage beyond what could be supplied by native grasses. Irrigation ditches were constructed as land was cleared and put into production. This forage-based economy persisted well past 1900 when Reno's expansion and effects of federal reclamation efforts caused the system to change.

Mining occurred in the Olinghouse District located in the Pah Rah Range and in the Peavine District located around Peavine Mountain. Both districts were active during the late nineteenth century and extended into the early years of the twentieth century.

Little information has been identified regarding the history of Hungry Valley. The valley was peripheral to all of the major themes just discussed. Examination of the 1872 General Land Office (GLO) plat for Township 21 North, Range 20 East failed to reveal features of cultural importance. The 1908 GLO plat of the same township revealed a number of roads, but little else. Dwellings, ditches, and cultivated fields were absent. BLM records indicate that a homestead entry filed in 1934 (south of the proposed processing area) was cancelled six years later. Evidence of mining is limited to prospects for copper, titanium, manganese, and uranium in the hills that border Hungry Valley (Bonham 1969). Land in Hungry Valley was purchased and put into trust for the Reno-Sparks Indian Colony in 1986. Since then, a sizable community has been established, with many homes, a school, and a community center.

Residential development in adjacent valleys has caused an increase in use of Hungry Valley as an informal recreation area. Evidence of off-road vehicle use is pronounced.

Previous Cultural Resource Identification Studies

Archival resources were reviewed to determine the level of prior work conducted. The archival study area extended from the crest line running through Hungry Mountain on the west to the crest line of Hungry Ridge on the east, and two miles to the north and south of surface disturbance associated with the Proposed Action, Alternative A, or Alternative B.

Part or all of 27 archaeological inventories have been conducted within the archival study area. Approximately 1,960 acres have been studied and 122 cultural resources identified: 75 prehistoric period sites, 5 historic period sites, 32 prehistoric period isolates, 3 historic period

isolates, and 7 isolates for which a period was not ascribed. This represents a density of approximately one site for each 25 acres inventoried and a density of approximately one isolate for each 47 acres inventoried.

One archaeological inventory was prepared for areas subject to surface disturbance as a result of the Proposed Action (McCabe and Clay 2000). Areas subject to field investigation included the Processing Facility, North and South Mine areas, the access road that extends between the mine areas and the Processing Facility, and the access road extending from the haul road to Eagle Canyon Road. An inventory has been completed that includes the portion of Chickadee Drive to be upgraded as part of Alternative A (Young, McGuire, and Furnis 2000), and another inventory addresses the southern access included as part of Alternative B (McCabe 2000).

Comparatively few buildings and structures are present within the immediate area of the Proposed Action, Alternative A, Alternative B, or within view of those areas. Housing on the Reno-Sparks Indian Colony is located about one mile east of the north and south mine areas. Under Alternative A, some residential housing in the Chickadee Drive area would be located along the proposed access route. None of the buildings in the above listed areas appear to be greater than 50 years in age. As a result, BLM resource specialists determined that an inventory of architectural resources was not required.

Information was gathered from representatives of the Reno-Sparks Indian Colony, the Pyramid Lake Paiute Tribe, and the Washoe Tribe of Nevada and California. This information gathering effort was conducted by BLM resource specialists for use during the conduct of NEPA analyses, and during Nation-to-Nation consultations required in accordance with federal acts, regulations, or executive orders. Tribal representatives have expressed concern over juniper located in the proposed plant site and impacts construction of the processing plant would have on wildlife in the hilly southern portion of the valley. Colony representatives have expressed a concern regarding reclamation activities. They have encouraged use of native species in the reclamation seed mix. Also, they seek assurance that monitoring will be conducted to ensure successful reclamation. BLM and the Reno-Sparks Indian Colony continue to consult in an effort to identify ways to lessen Colony concerns regarding culturally sensitive areas.

NATIVE AMERICAN RELIGIOUS CONCERNS/INDIAN TRUST RESPONSIBILITIES

In accordance with provisions of the National Historic Preservation Act, the American Indian Religious Freedom Act, and the Native American Graves Protection and Repatriation Act, the BLM has consulted with representatives of the Reno-Sparks Indian Colony and both the Washoe and Paiute tribes. The BLM hosted tours of the proposed Project area to which tribal representatives were invited. Native Americans are concerned with the public distribution of information regarding the location and nature of many traditional places. Specific information provided to the BLM has been held as confidential. Given the sensitivity of this issue, the current analysis addresses types of resources rather than specific resources. Information on Northern Paiute and Washoe religious beliefs can be found in a number of sources, including (Fowler and Liljebald 1986; d'Azevedo 1986; ITC 1976a, 1976b; Fowler and Fowler 1974;Hultkranz 1976; Park 1934, 1938; Stewart 1941, 1944; Olofson 1979, Whiting 1950; Leis 1963; Siskin 1983; Freed and Freed 1963; Downs 1961; and Dangberg 1968.) Information presented below was drawn from these sources.

Religions of Native American groups in the Great Basin exhibit a strong association with the earth. The earth, with all of its biophysical components, is believed to be a living being. Ethnographic Information indicates that Northern Paiute and Washoe occupied the study area. Both the Northern Paiute and Washoe way of life is characterized by the concept of living in harmony with the natural environment. Rituals and ceremonies address the need to ensure that plants, animals, and physical elements flourish. The continued welfare of the people depends on these rituals and ceremonies being performed properly. The manner of performing the rituals and ceremonies, the places at which they are performed, and perhaps even the time of their performance are often prescribed.

A central feature of their religious belief is that supernatural power has permeated the earth since its creation. Religious behavior revolves around the acquisition of this power. Sources of power are numerous, including sources of water, prominent mountain peaks, and caves. Animals

and, to a lesser extent, plants have power and this power can be conveyed to people by supernatural spirits who control individual species.

Religious expression takes several primary forms - ceremonies; individual prayer; and use of power spots for vision questing, curing, and doctoring. The most frequent form of expression is the individual prayer. Prayers are made to the spirits and were especially important in connection with places where spirits may live or places regarded as power spots.

SOCIAL AND ECONOMIC RESOURCES

In November 1999, Environmental Management Associates, Inc. (EMA 2000f) completed a baseline study of socioeconomic conditions for areas that may be affected by the Project. The study area included Washoe County, the Reno Urbanized Area, and the immediate vicinity of the Project area including the adjacent Reno-Sparks Indian Colony. The purpose of the study was to provide quantitative and qualitative information describing the existing social and economic environment of the area in order to determine potential socioeconomic impacts of the proposed Project. Information presented in the baseline study report as well as additional socioeconomic information for the Washoe County area is summarized below with references incorporated.

POPULATION TRENDS AND DEMOGRAPHIC CHARACTERISTICS

Population Trends

Nevada was the fastest growing state in the U.S. between 1990 and 1999, experiencing a 51 percent growth rate compared with 9.6 percent nationwide. In-migration was the primary reason for the population increase, accounting for 80.7 percent boost in population. In Washoe County, the net migration ratio of people moving into the county compared with people leaving the county was 1:19, or one person moving out for every 19 people moving into the county. Much of the increase in population has been in the casino gaming, tourism, and mining industries, and an associated boom in the construction industry. The population of Nevada is expected to continue its upward trend, increasing by 643,803 people to an estimated 2,611,453 by year 2010 (**Table 3-19**). Similarly, Washoe County's average projected growth rate over the next 10 years is 1.7 percent, increasing by 66,972 to an estimated 390,462 people by year 2010. The population of the Reno Urban Area (which includes the cities of Reno and Sparks, as well as other urbanized communities) increased by 12.7 percent from 213,835 in 1990 to 241,120 in 1999 (Nevada State Demographer's Office 2000).

In 1997, the Reno-Sparks Indian Colony conducted a survey using the Tribal Data Resources questionnaire. Data collected through the survey indicated a population of 1,081 people. The Reno-Sparks Indian Colony consists of five land parcels: the Hungry Valley, Spanish Springs, Colony Road, Verdi, and South Virginia parcels. Based on tribal census data and growth projection techniques, the Hungry Valley Parcel located adjacent to the east boundary of the Project area is projected to increase by 113 persons from 502 (2000 estimate) to 615 by year 2015. Projections for the Colony would increase from 1,081 to 1,618 by 2,027 (Nevada-Sierra Planners 2000a).

TABLE 3-19
Population Forecasts – State of Nevada and Washoe County

Year	State of Nevada	Washoe County
2002	2,214,813	346,005
2003	2,281,669	352,865
2004	2,345,385	358,995
2005	2,402,097	364,068
2006	2,452,268	369,144
2007	2,496,463	373,627
2008	2,528,978	376,978
2009	2,568,120	382,781
2010	2,611,453	390,462
Percent Change (2002-2010)	+17.9%	+12.8%

Source: Nevada State Demographer's Office. 2000.

Demographic Characteristics

Age Distribution

In 1999, 27.2 percent of Nevada's population was under 18 years of age, slightly higher than the percent of people younger than 18 years of age (25.8 percent) in Washoe County (**Table 3-20).** Washoe County also lagged slightly behind the state with respect to percent of population 65 years of age and older (11.5 percent in Nevada and 10.7 percent in Washoe County). Median age of the Washoe County population in 1998 was 36.9 years of age (U.S. Department of Commerce 2001).

Data collected in 1997 by the Reno-Sparks Indian Colony indicated 42 percent under 18 years of age, 55 percent between 18 and 65 years old, and 3 percent 66 years of age or older. Approximately 48 percent of the population were male and 52 percent female (Nevada-Sierra Planners 2000a).

Personal Income

Per capita income in Nevada in 1998 was $29,200, compared with $33,040 for Washoe County (**Table 3-21**). The per capita income of the state was 107.3 percent of the national average and, in Washoe County, 113.2 percent of the national per capita personal income average.

TABLE 3-20
Demographic Characteristics
State of Nevada and Washoe County (1999 Estimate)

Characteristic	State of Nevada	Washoe County
Total Population	1,809,253	319,816
Male	50.9%	50.9%
Female	49.1%	49.1%
Age		
<18 Years	27.2%	25.8%
18 to 64 Years	61.3%	63.5%
65+ Years	11.5%	10.7%
Ethnicity		
White	85.6%	89.1%
Black	7.7%	2.6%
Native American, Eskimo, or Aleut	1.8%	2.3%
Asian or Pacific Islander	4.9%	5.9%
Hispanic	16.8%	14.4%
Persons Below Poverty Level		
Total Percent of Persons	10.7%	9.8%
Total Percent of Children	15.4%	13.8%

Source: U.S. Department of Commerce. 2001.

TABLE 3-21
Average Per Capita Personal Income
United States, State of Nevada, and Washoe County

Year	United States	State of Nevada		Washoe County		
	Per Capita Income	Per Capita Income	% of U.S. Average	Per Capita Income	% of U.S. Average	% of Nevada Average
1996	$24,651	27,142	110.1%	$30,611	124.2%	112.8%
1997	$25,924	$28,216	108.8%	$31,687	122.2%	112.3%
1998	$27,203	$29,200	107.3%	$33,040	121.5%	113.2%

Source: U.S. Department of Commerce. 2001.

The mining industry had the highest annual average wages paid ($55,744) in the state in 1999, up 5.5 percent over 1998 annual average wages of $52,824. The lowest paid industry in the state was the wholesale and retail trade sector with average annual wages of $23,873 (**Table 3-22**). Washoe County mirrored the state in highest and lowest annual average wages paid in 1999, with the mining industry being the highest paid ($79,916), and the wholesale and retail trade sector the lowest paid ($25,729). Per capita income and poverty level data for the Reno-Sparks Indian Colony are described in more detail in the *Environmental Justice* section of this Chapter.

According to estimates provided by the Nevada Department of Employment, Training and Rehabilitation (NDETR), the highest average weekly wage in Washoe County during 1998, was in the mining industry ($1,281). The average weekly mining wage was more than $500 above average weekly wages earned in the second highest industry - finance, insurance and real estate. The average weekly wage for Washoe County (all industries) was $574. Of the 179,830 persons employed during 1998 in Washoe County, approximately 513 and 12,969 persons were employed in the mining and construction industries, respectively (NDETR 2000).

Labor force and employment statistics for 1990 through 1999 for Washoe County and the State of Nevada are presented in **Table 3-23**. Total employment has increased in both Washoe County and the State. With the exception of 1990, unemployment in Washoe County averaged 0.6 percent lower than the State. The lowest rate of unemployment occurred in both Washoe County and the State during 1997. Since 1997, the unemployment rate in the State has been steadily increasing, while Washoe County's unemployment rate has remained steady and decreased from 1998 to 1999 (NDETR 2000).

TABLE 3-22
Average Annual Wages[1] by Major Industry
State of Nevada and Washoe County

Industry	1998	1999	% Change (1998-1999)
State of Nevada			
Mining	$52,824	$55,744	+ 5.5%
Construction	$37,187	$38,591	+ 3.8%
Manufacturing	$34,941	$36,130	+ 3.4%
Transportation, Communications, & Public Utilities	$33,466	$35,548	+ 6.2%
Wholesale & Retail Trade	$22,834	$23,873	+ 4.6%
Finance, Insurance, & Real Estate	$37,058	$38,915	+ 5.0%
Service Industries	$28,217	$29,103	+ 3.4%
Government	$36,345	$37,585	+ 3.4%
All Industries	$30,195	$31,212	+ 3.4%
Washoe County			
Mining	$66,620	$79,916	+ 20.0%
Construction	$35,594	$36,755	+ 3.3%
Manufacturing	$35,994	$37,737	+ 4.8%
Transportation, Communications, & Public Utilities	$34,721	$38,733	+ 11.6%
Wholesale & Retail Trade	$24,978	$25,729	+ 3.0%
Finance, Insurance, & Real Estate	$39,686	$41,984	+ 5.8%
Service Industries	$25,940	$27,50	+ 6.0%
Government	$37,320	$39,468	+ 5.8%
All Industries	$29,831	$31,380	+ 5.2%

[1] Includes firms covered under provisions of Chapter 612, Nevada Revised Statutes on Unemployment Compensation.
Source: Nevada Department of Employment, Training and Rehabilitation (NDETR). 2000.

TABLE 3-23
Labor Force Statistics for State of Nevada and Washoe County

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Washoe County										
Total Labor Force	149,600	151,400	156,700	159,500	161,300	163,700	166,100	170,600	175,200	173,200
Total Employed	142,000	143,900	147,100	149,100	152,900	155,900	158,000	164,400	168,600	166,800
Unemployed	7,600	7,500	9,600	10,400	8,400	7,800	8,100	6,200	6,600	6,400
Unemployed Rate	5.1 %	5.0 %	6.1 %	6.5 %	5.2 %	4.7 %	4.9 %	3.7 %	3.8 %	3.7 %
State of Nevada										
Total Labor Force	667,000	693,000	715,000	739,000	779,500	804,300	840,600	883,200	919,900	941,600
Total Employed	633,100	654,800	667,400	686,000	731,500	760,300	795,100	847	880,300	899,700
Unemployed Rate	33,000	38,000	47,000	53,000	48,000	43,400	45,500	36,200	39,600	41,900
	4.9 %	5.5 %	6.6 %	7.2 %	6.2 %	5.4 %	5.4 %	4.1 %	4.3 %	4.4 %

Source: NDETR 2000.

HOUSING

Existing housing opportunities in Washoe County are adequate to serve the current population without overcrowding; however, all housing units may not be affordable or suitable for families needing them (Washoe County 1999d). In 1999, Washoe County had approximately 141,500 housing units of which 58 percent were single family dwellings, 32 percent multiple family units, and 10 percent mobile homes. Mobile home units were used more by people residing in unincorporated portions of the county (22 percent) than in the incorporated cities of Reno (seven percent) and Sparks (four percent).

The Hungry Valley Parcel of the Reno-Sparks Indian Colony contains approximately 152 single family dwellings with an average lot of .45 acres. The Hungry Valley Parcel averages 2.75 persons per household. Multi-family units are proposed for the future, however, all new housing projects have been suspended until adequate sources of water are developed for the Parcel (Nevada-Sierra Planners 2000a). Approximately 82 percent of Hungry Valley Parcel housing units are owner-occupied (EMA 2000f).

The current average cost of a single family home in the area is approximately $182,000 (Reno-Sparks Association of Realtors 2000). Average rent for a two-bedroom apartment is $560-$583 (Sierra Pacific Resources 2000).

PUBLIC UTILITIES AND SERVICES

Water

The majority of the residents living in unincorporated Washoe County rely on individual wells and surface springs for domestic use (see also *Water Resources* in this Chapter). Sierra Pacific provides water to approximately 200,000 residents in mostly incorporated areas. Approximately 85 percent of the drinking water supplied by Sierra Pacific is from Lake Tahoe. Surface water is conventionally treated at the Chalk Bluff Water Treatment Plant (located in northwest Reno) or Glendale Water Treatment Plant in Sparks. The remaining 15 percent of drinking water is obtained from 27 groundwater wells in Truckee Meadows.

Water on the Reno-Sparks Indian Colony Hungry Valley Parcel is provided by two wells operated by the Hungry Valley Utility District. Each well has an approximate capacity of 150 gallons per minute. A 300,000–gallon steel storage tank provides approximately two days of operational storage, fire suppression of 1000-gallons per minute for a two-hour duration and emergency storage of 50 percent of operational

storage. The Hungry Valley Utility District system demand is approximately 46,500-gallons per day or 52 acre-feet annually (Nevada-Sierra Planners 2000b).

Wastewater Treatment

Residents in the unincorporated areas of Washoe County rely primarily on private septic systems for disposal of domestic waste. The Truckee Meadows Water Reclamation Facility serves most of the incorporated areas of Washoe County. The treatment plant has a capacity of approximately 40 million gallons per day (mgd) (approximately two-thirds from Reno and one-third from Sparks). There is also a subregional plant located in Stead (Sierra Pacific Resources 2000).

Wastewater on the Hungry Valley Parcel of the Reno-Sparks Indian Colony is treated in a 6-acre lagoon with primary and secondary cells and two infiltration basins. The system is designed to serve 250 homes and is currently at 60 percent capacity serving 152 residences (Nevada-Sierra Planners 2000b).

Solid Waste Disposal

Solid waste in Washoe County is collected by Reno Disposal Company and transported to Lockwood Landfill in Storey County, which is owned and operated by Waste Management. Lockwood Landfill is the regional landfill for Lyon, Carson, Douglas, and Washoe counties. The landfill is a Class I industrial/municipal landfill. Lockwood Landfill currently processes approximately 3,750 tons per day of solid waste (Gravenstein 2000). The landfill's projected lifespan is estimated at 20-25 years (Sbragia 2000). Recyclable materials are also collected throughout the county. Collection and disposal of solid waste generated on the Hungry Valley Parcel of the Reno-Sparks Indian Colony is performed under contract to a private vendor.

EMERGENCY SERVICES

Law enforcement in the study area is provided by the Washoe County Sheriff's Department and Reno-Sparks Indian Colony peace officers. The Truckee Meadows Fire Protection District encompasses the Project area and unincorporated areas of Washoe County. BLM is responsible for wildland fire protection on federal land under their jurisdiction. Emergency and non-emergency ambulance service for the study area is provided by Regional Emergency Medical Services Authority, which also provides life-flight transport within a 150-mile radius of Reno.

The Hungry Valley Community of the Reno-Sparks Indian Colony has a volunteer fire program and paramedic services (Nevada-Sierra Planners 2000a).

HEALTH CARE AND SOCIAL SERVICES

Major medical services in Washoe County are provided by Saint Mary's Regional Medical Center and Washoe Medical Center in Reno, and Northern Nevada Medical Center in Sparks. There are numerous other hospitals, medical groups, and clinics located within the county. The Washoe County Health Department offers limited family planning and children's health services.

LIBRARY AND RECREATIONAL FACILITIES

Library services in the study area are provided by the Washoe County Library. There are currently 13 libraries in the system, with the main library located in Reno. Areas north of Reno/Sparks are served by the North Valley Branch (formerly Peavine Branch) in Golden Valley. Washoe County Library provides a variety of classes, storytime programs, literacy programs, homebound services, and internet access. It currently maintains a $7 million budget and a collection of approximately 700,000 materials.

There are a number of regional parks located in Washoe County, including Rancho San Rafael Park located in northern Reno near the Project area. There are numerous public and private golf courses, a regional shooting facility, and several horse arenas. There are community centers in Black Springs, Lemmon Valley, Sun Valley, the North Valley Regional Sports Complex, and the 5 Lazy Regional Park and Community Center, located near the Project area. The cities of Reno and Sparks, and unincorporated Washoe County have

approximately 50, 33, and 53 park sites, respectively (Washoe County 1998). Other recreational opportunities exist on BLM-managed lands located outside urbanized areas. (See also *Recreation* in this Chapter).

PUBLIC EDUCATION

The Washoe County School District provides public educational services in both the incorporated and unincorporated areas of Washoe County. The Washoe County School District consists of 59 elementary, 11 middle, and 11 high schools and employs approximately 6,000 teachers, counselors, administrators, and support staff. Approximately 12 elementary schools are year-round and five are multi-track. The district offers advanced occupational training to high school juniors and seniors at the Glenn Hare Occupational Center. Students with disabilities may attend the Marvin Picollo School which serves all grades. The area has nine private elementary schools, nine private high schools, and numerous vocational schools. To accommodate future growth, the Washoe County School District plans to build seven more schools (three high schools and four elementary schools) financed by passage of a $178 million school bond in 1998.

Washoe County School District enrollment was 55,673 for school year 2000-01, an increase of approximately 3 percent from the previous year enrollment of 54,053. Twenty-one elementary schools, three middle schools, and six high schools within the study area are currently operating at or above capacity, with student teacher ratios ranging from 20.2 to 27.2. Student teacher ratios for the district have remained consistent ranging from 23.1 in 1997-98 to 23.0 in 1999-2000.

School-aged children residing on the Reno-Sparks Indian Colony also attend schools in the Washoe County School District. Native Americans account for 2.55 percent of total school district enrollment.

PUBLIC FINANCE

Forms of Government

In Nevada, the powers of local governments are established by statute, subject to change by the state legislature. County governments are created directly by the state legislature. City governments may be established by general law or special charter. Special districts are the most common form of local government in the state. The state constitution does not reserve any governmental authority to either county or city governments. Counties and cities share a similar range of governmental authority including: general police powers, control of land use, and health, welfare, and recreation responsibilities. Counties have additional powers including property assessment courts, tax collections, and administration of special licenses. Although counties maintain land use and tax rate functions, unincorporated towns may, with county approval, take on most functions of city government (Ebel 1990).

Washoe County was one of the original nine Nevada counties established by the State's first legislative assembly on November 25, 1861. The county has grown to from a surface area of 1,196 square miles to approximately 6,905 square miles today. Washoe County is governed by a five-member Board of County Commissioners, each elected to a four-year term. The Board of County Commissioners appoints a seven-member planning commission. The County Commissioners oversee county operations including administration, law enforcement, judicial, public works, and economic development. The county school district serves the entire county and is governed by an elected board, with the superintendent and administration responsible for day-to-day operations.

Current Fiscal Condition

Public finances in Nevada include locally derived and state-shared revenues. Locally derived finances consist of ad valorem property taxes on real and personal property and the net proceeds of mines located within the county. State-shared revenues include sales, motor vehicle, fuel, and gaming revenues.

Approximately half of Washoe County's $410 million budget is from state and federal grants. The remainder (the operating budget), is generated through sales and property tax revenues. Sales tax revenue is distributed to local governments based on a statewide formula approved by the Legislature. Property taxes are based on the assessed value of real property, and a rate applied to that value.

During fiscal year 1999-2000, approximately 36 percent, or $104.2 million of the $288.9 million Washoe County budget was expended for public safety, 16 percent ($46.4 million) for general government, and 12 percent ($35.5 million) for judicial (Washoe County 2000).

Tax Revenue from Mining

There are two taxes on mining levied by state and local governments in Nevada; a tax on net proceeds of mineral operations, and property tax on mining-related property. The tax on mining proceeds is mandated by the Nevada constitution. Net proceeds are calculated by subtracting allowable deductions from the gross yield of mining production. Deductions include the costs of extraction, transportation to mill, reduction and refining, marketing, and insurance, as well as depreciation of the plant, machinery, and equipment and royalties paid. Until 1987, all mining tax receipts on net proceeds were allocated to local governments. Currently, the state may tax up to five percent on net proceeds and subsequently distribute tax receipts to the counties on the basis of their ad valorem tax rate. The current ad valorem tax rate (FY 1999-00) for Washoe County is 2.538 (Nevada Department of Taxation 1999). The maximum state share of net proceeds is approximately 60 percent (Ebel 1990).

The taxable sales by mining and quarrying of nonmetallic minerals in Nevada declined 15 percent from $7,817,331 during the 1997-1998 fiscal year to $6,594,092 during 1998-1999 (Nevada Department of Taxation 2000).

ENVIRONMENTAL JUSTICE

Executive Order 12898 directs federal agencies to identify and address any disproportionately high and adverse human health or environmental effects of their programs on minority and low-income populations. Minority populations included in the census are identified as Black; American Indian, Eskimo, or Aleut; Asian or Pacific Islander; Hispanic; or other. The low-income level is defined as the percentage of families with an income below the 1990 poverty level. The average poverty threshold for a family of four was $12,674 in 1989. Environmental Protection Agency (EPA) and Council on Environmental Quality (CEQ) guidelines for the conduct of environmental justice assessments were followed when preparing this analysis.

Selected categories of population data are available from the 2000 census. U.S. Bureau of Census data were reviewed for the Reno-Sparks Indian Colony, for the census tract in which the Proposed Action would occur (Tract 35.014), for immediately adjacent census tracts (tracts 26.04, 27.01, and 35.02), for Washoe County and for the State of Nevada.

The 2000 census data indicate that 14 percent of Tract 35.01 and 11 percent of Tract 35.02 are comprised of persons assigned to the group consisting of American Indians, Eskimo, or Aleut (**Table 3-24**). Nearly all (99 percent) of the persons living at the Reno-Sparks Indian Colony as of 1990 were assigned to this group. By comparison, only two percent of Washoe County, and one percent of the State of Nevada is assigned to this group. Therefore, for the purposes of screening for environmental justice concerns, a minority population, as defined by EPA's guidelines (1998), exists within Tract 35.01 and 35.02. Data for adjacent census tracts 26.04 and 27.01 are consistent with regional and state levels. Therefore, a minority population does not exist within these tracts.

Table 3-25 provides information on the number of persons living below the poverty level in 1989 for the Reno-Sparks Indian Colony, selected census tracts, the Reno urbanized area, and Washoe County and the State of Nevada. Similar data are not yet available based on the 2000 census. As a result, the 1990 census remains the most recent source of detailed data at the census trace level. The 1990 data indicate that within Tract 34.98 (the 1990 equivalent of Tracts 35.01 and 35.02), a disproportionately high percentage of persons assigned to the group comprised of American Indians, Eskimo, or Aleut live below the poverty level. The Reno-Sparks Indian Colony also reflects a disproportionately high percentage of persons assigned to the group comprised of Native Americans that live below the poverty level. Therefore, for the purposes of screening for environmental justice concerns, a low-income population, as defined by EPA's guidelines (1998), exists within Tract 34.98. This population is located immediately adjacent to the proposed project area.

Table 3-25 also indicates that a disproportionately high percentage of Blacks in tracts 27.01 and 34.98 live below the poverty level. These findings are based on a comparatively small population of Blacks living in those areas (37 and 34 individuals, respectively). Although Blacks are under-represented in these census tracts (less than one percent of the population), a relatively high percentage of those present live below the poverty level. Therefore, for the purposes of screening for environmental justice concerns, Blacks represent a low-income population, as defined by EPA's guidelines (1998), within tracts 27.01 and 34.98. It should be noted, however, that these populations are located in portions of the census tracts that would not be impacted by the proposed Project. Low-income Blacks in Census Tract 27.01 are located in the Sun Valley Area. Those in Census Tract 34.98 are located north of the Project area, around Pyramid Lake.

Data for adjacent census tract 26.04 are consistent with regional and state levels. Therefore, a minority population does not exist within this tract.

Table 3-24
2000 Ethnic Composition of Study Area and State of Nevada Populations

	White			Black			American Indian, Eskimo, or Aleut			Asian or Pacific Islander			Other Race			Total Population
Location1	Qty.	% of Total	% His-panic	Qty	% of Total	% His-panic	Qty.	% of Total	% His-panic	Qty	% of Total	% His-panic	Qty	% of Total	% His-panic	
Washoe County	272,985	80%	9%	7,093	2%	5%	6,162	2%	16%	16,079	5%	2%	37,167	11%	79%	339,486
Census Tract 35.01[2]	2,885	80%	7%	14	0.4%	0%	508	14%	9%	15	0.4%	0%	183	5%	58%	3,605
Census Tract 26.04[3]	7,284	88%	5%	146	2%	3%	181	2%	13%	122	2%	3%	556	7%	62%	8,289
Census Tract 27.01[4]	11,094	80%	10%	227	2%	5%	259	2%	21%	400	3%	5%	1,826	13%	81%	13,806
Census Tract 35.04[5]	2,251	95%	3%	13	0.5%	0%	28	11%	4%	21	1%	33%	62	3%	23%	2,375
Reno-Sparks Indian Colony	32	4%	22%	2	0.2%	0%	830	94%	8%	0	0.0%	0.0%	17	2%	11%	881
State of Nevada	1,501,886	75%	13%	135,477	7%	3%	26,420	1%	19%	98,692	5%	2%	235,782	12%	78%	1,998,257

1 U.S. Department of Commerce, Bureau of the Census 2001 U.S. Census, 2000 Redistricting Data.
2 Census tract 35.01 includes the Project Area and the area north and east of the Project Area including the Reno-Sparks Indian Colony.
3 Census Tract 26.04 includes the area west of the Project area.
4 Census Tract 27.01 includes the area south and west of the Project area.
5 Census Tract 35.04 includes the Spanish Springs area east of the Project Area.

Source: U.S. Department of Commerce 2001.

Table 3-25
Persons Below Poverty Level by Race in the Study Area Compared with the State of Nevada (1989)

Location[1]	White		Black		American Indian, Eskimo, or Aleut		Asian or Pacific Islander		Other Race		Total Population	
	Number Below Poverty Level[2]	% Total Race	Number Below Poverty Level	% Total Race	Number Below Poverty Level	% Total Race	Number Below Poverty Level	% Total Race	Number Below Poverty Level	% Total Race	Number Below Poverty Level	% Total Pop.
Washoe County	18,199	8%	955	17%	1,108	22%	1,160	12%	2,035	22%	23,457	9%
Reno Urbanized Area[3]	16,165	9%	931	18%	642	18%	1,157	12%	1,942	22%	20,837	10%
Census Tract 26.04[4]	383	5%	6	5%	13	6%	0	0%	19	20%	421	5%
Census Tract 27.01[5]	701	10%	16	43%	0	0%	0	0%	81	29%	798	10%
Census Tract 34.98[6]	310	5%	13	38%	434	42%	0	0%	7	10%	764	11%
Reno-Sparks Colony	0	0%	0	0%	95	36%	0	0%	0	0%	95	0%
State of Nevada	83,235	8%	17,262	22%	4,766	23%	3,843	10%	10,554	20%	119,660	10%

1 U.S. Department of Commerce, Bureau of the Census, 1991 U.S. Census, Summary Tape File 3A and 3C1 unless otherwise noted.

2 The average poverty threshold for a family of four persons was $12,674 in 1989. The poverty threshold is not adjusted for regional, state, or local variations in the cost of living.

3 Includes Reno, Sparks, Stead, Sun Valley, and other urbanized areas outside of Reno/Sparks city limits.

4 Census Tract 26.04 includes the area west of the Project area.

5 Census Tract 27.01 includes the area south and west of the Project area.

6 Census Tract 34.98 includes the Project area and the area to the north and east of the Project area, including the Reno-Sparks Indian Colony.

Source: U.S. Department of Commerce 1991.

CHAPTER 4
CONSEQUENCES OF PROPOSED ACTION AND ALTERNATIVES

INTRODUCTION

Potential direct and indirect impacts of the proposed Reno Clay Plant Project (Project/Proposed Action) are discussed in this chapter. This chapter also evaluates direct and indirect impacts of alternatives to the Proposed Action that are designed to reduce or eliminate potentially significant impacts resulting from the Proposed Action. The Proposed Action and alternative selection process are described in Chapter 2.

Initiation of mining, implementation of alternatives, closure, and final reclamation of the Project area would result in irreversible and irretrievable commitments of resources, residual adverse impacts, and cumulative effects.

- Irreversible commitments are those that cannot be reversed, except over a very long period of time.
- Irretrievable commitments are those that are lost for a period of time.
- Residual adverse impacts are those effects remaining after implementation of mitigation measures.
- Cumulative effects result from the incremental effects of the Proposed Action and Alternatives when combined with past, present, and reasonably foreseeable actions.

Implementation of the Proposed Action and/or Alternatives would cause resources to be consumed, committed, or lost during and after closure of the project. Nonrenewable resources such as clay material would be irreversibly committed during processing operations.

The BLM has reviewed all aspects of the Proposed Action and following alternatives to the Proposed Action: No Action Alternative; Alternative A – Chickadee Drive Access Route; Alternative B – South Access Route; and mitigation measures to avoid, minimize, and reduce adverse impacts to the environment.

The agency has used environmental data collected in the Project area to predict environmental effects that could result from the Proposed Action and alternatives. A level of uncertainty is associated with any set of data in terms of predicting outcomes; especially where natural systems are involved. The predictions described in this analysis are intended to allow comparison of alternatives including the Proposed Action, as well as provide a method to determine whether activities proposed by the applicant would be expected to comply with applicable regulations (e.g., Clean Air Act).

GEOLOGY, MINERALS, AND PALEONTOLOGY

SUMMARY

Implementation of the Proposed Action would have direct impacts on geologic and mineral resources. The impacts would be limited to excavation and relocation of overburden and removal and processing of clay material. Diatoms and ostracods are the only fossils documented as occurring in the Project area, and neither are considered sensitive. Although mining in the area may result in loss or destruction of fossils, this region of Nevada is not known for significant paleontological resources. If rare plant, vertebrate, or invertebrate fossils are discovered during mining related activities, Oil-Dri would contact BLM to determine the steps necessary to preserve the fossils. Impacts would be limited to areas of land disturbance. Impacts resulting from implementation of Alternative A or B would be the same as those for the Proposed Action.

DIRECT AND INDIRECT IMPACTS

Proposed Action

Geologic and mineral resources within the area affected by the Proposed Action would be directly impacted by relocation of overburden and removal and processing of up to 6.9 million tons of clay material over the life-of-mine. The topography of the North and South Mine areas would be permanently modified as a result of mining.

Diatoms and ostracods are the only fossils documented as occurring in the Project area, and neither are considered sensitive. Although mining in the area may result in loss or destruction of fossils, this region of Nevada is not known for significant paleontological resources.

Alternative A – Chickadee Drive Access Route

Impacts on geology, minerals, and paleontology resulting from implementation of Alternative A would be the same as those described for the Proposed Action.

Alternative B – South Access Route

Impacts on geology, minerals, and paleontology resulting from implementation of Alternative B would be the same as those described for the Proposed Action.

No Action Alternative

The No Action Alternative would eliminate recovery of up to 6.9 million tons of clay material from the geologic resource because the proposed Project would not be developed.

MITIGATION AND MONITORING MEASURES

No mitigation and monitoring measures beyond those described in the *Proposed Action* and *Environmental Protection Measures* sections of Chapter 2 have been identified to reduce impacts to Geology, Minerals, and Paleontology.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Up to 6.9 million tons of clay material would be removed and processed if the Proposed Action is implemented.

RESIDUAL ADVERSE EFFECTS

No residual adverse effects to the geologic and paleontological resources would be expected from implementation of the Proposed Action.

AIR RESOURCES

SUMMARY

The proposed Reno Clay Plant Project operations, including surface disturbance, mining, raw material drying and processing, and product handling, would cause emissions of criteria air pollutants. The primary pollutant of concern from open-pit mining and mineral processing activities is particulate matter. Particulate emissions would be mitigated by dust suppression and best management practices. Gaseous pollutant emissions, including oxides of nitrogen (NOx), volatile organic compounds (VOC), sulfur dioxide (SO_2) and carbon monoxide (CO), generated from internal combustion engines, would be minimized by proper equipment maintenance and operation.

Oil-Dri would apply for all required air quality construction and operating permits from the Washoe County Air Quality Management Division (AQM). Particulate and gaseous emissions generated by the dryers would be controlled as required by the air quality permit(s). (Alternatives to the Proposed Action only affect access routes and would not measureably change the air contaminant emissions inventory for the Project.) The Oil-Dri project emissions would not affect air quality or visibility in any Class I areas.

DIRECT AND INDIRECT IMPACTS

Proposed Action

Under the Proposed Action, raw clay material would be mined and transferred to the Processing Facility for drying and distribution. Finished material would be packaged for sale as industrial and consumer absorbents and as fine-grained, off-specification material as a flow enhancer in grain handling operations. The off-specification material would be sold in bulk containers and transported by truck Remaining off-specification material would be hauled to the North and South Mine areas for use as backfill.

Criteria pollutant emissions have been estimated for the Proposed Action and the alternatives based on the summary of mining operations presented in Chapter 2. A complete emissions inventory for the project is presented in the Air Quality Assessment Report (ERM 2000a). Dispersion modeling techniques have been used to predict ambient impacts from the proposed mining activities.

Particulate Emissions

Sources of particulate matter emissions from the proposed mining areas would include excavation, truck loading, wind erosion of open pit faces and overburden stockpiles, and road dust along haul roads. The generation of fugitive dust from surface activities would be controlled by Best Management Practices (Nevada State Conservation Commission 1994). Implementation of those BMPs would reduce current fugitive dust emissions from traffic on existing roads in Hungry Valley.

Clay material processing and drying would also generate particulate matter emissions. Dryer emissions would be controlled by a baghouse. Material transfer systems for the finished product would be pneumatic systems with baghouses at transfer points. Material handling baghouses serve both as process equipment and pollution control equipment.

Gaseous Emissions

Proposed Oil-Dri operations would include sources of gaseous air pollutants including sulfur dioxide, carbon monoxide, oxides of nitrogen, and volatile organic compounds. The primary source of these emissions is exhaust from gasoline and diesel-fired engines used to power mining equipment and haul trucks. The amount of gaseous exhaust emissions from various types of equipment depends on the size, age, and fuel efficiency of the engines. Sulfur dioxide emissions would be limited by purchasing fuel that meets regulatory standards for the amount of contained sulfur. Other gaseous emissions from equipment engines would be minimized through proper operation and maintenance. Estimated annual emissions are shown in **Table 4-1**.

TABLE 4-1
Estimated Annual Emissions, Based on RMOS
Reno Clay Plant Project

	Pollutants (tons/year)				
	PM_{10}	Nox	VOC	SO_2	CO
Oil-Dri Proposed Action – All Emission Unit Groups	199	104	3	115	23

Notes: PM_{10} = Particulate Matter smaller than 10 microns; NOx = oxides of nitrogen; SO_2 = Sulfur Dioxide; VOC = Volatile Organic Compounds; CO = Carbon Monoxide.

Source: ERM 2000a.

Combustion of fuels in both external combustion burners and internal combustion engines generate gaseous emissions, with oxides of nitrogen being the pollutant of primary concern. Gaseous pollutant emissions are minimized through burner design and operation, and use of fuels that meet regulatory standards.

Estimated Project Emissions

Emissions associated with the Proposed Action have been estimated (ERM 2000a) for all emission units, including vehicle emissions, material handling, storage tanks, and support activities.

Total annual emissions from the Proposed Action are presented in **Table 4-1**. Process rates, emission factors, and control efficiency assumptions can be reviewed in the Air Quality Assessment Report. The project emissions inventory is based on a "realistic maximum operating scenario (RMOS)," as described in the report (ERM 2000a).

Total annual emissions listed above include point (stationary) sources, fugitive (diffuse) sources, and other sources such as storage tank vapor emissions. Air Quality permits typically address only point source emissions and fugitive process-related emissions. Lead emissions were not included in the inventory because vehicles operated at the Project would not use fuels containing lead and the raw materials contain only trace amounts of lead.

Ambient Impact Modeling

In general, air quality impacts expected from mining activities are a function of total pollutant emissions, meteorological conditions between the source and receptor, and distance to the community or receptor of interest. Modeling has been conducted to assess the ambient criteria pollutant concentrations resulting from the proposed project. Particulate matter smaller than 10 microns, oxides of nitrogen, carbon monoxide, and sulfur dioxide emissions were modeled using the U.S. Environmental Protection Agency's Industrial Source Complex Short Term 3 model. Results are shown in **Table 4-2**. Volatile organic compound emissions were evaluated using a generally accepted technique to demonstrate compliance with the ozone National Ambient Air Quality Standards (NAAQS) (ERM 2000a).

The fenced boundary of the Project area was modeled using receptors spaced at 50-meter intervals. In addition, receptors were placed in a grid pattern, as described in the Air Quality Assessment Report. Peak modeled impacts were consistently found near the fence line, with impacts decreasing with distance from the facility. Receptors were also placed at the Jarbidge Wilderness Area and at several sensitive locations in the Reno-Sparks Indian Colony, including the community center, arena, cemetery, and south residential area.

Modeling results in **Table 4.2** show that the modeled ambient impacts have decreased by an order of magnitude from receptors at the site boundary to receptors in the Reno-Sparks Indian Colony. The modeled values at the Reno-Sparks Indian Colony range from 2.24 to 8.36 $\mu g/m^3$ for the 24 hour PM_{10} averaging period. The NAAQ standard is 150 $\mu g/m^3$ for the same period.

Table 4-3 shows peak modeled impacts combined with available existing (background) contaminant concentrations for the Project area. Total ambient concentration must not exceed air quality standards. Background concentration data were not available for nitrogen dioxide or sulfur dioxide because these pollutants have not been monitored in Washoe County. The modeling results show that the facility, with proposed mitigation, would be expected to be in compliance with applicable ambient air quality standards.

TABLE 4-2
Modeled Ambient Impacts to Sensitive Receptors
Reno Clay Plant project

Criteria Pollutant	Averaging Period	Modeled High ($\mu g/m^3$)					
		RSIC Community Center	RSIC Cemetery	RSIC Arena	RSIC South Residence	Jarbidge Wilderness Area	NAAQS Standard
PM_{10}	24-Hour	8.36	4.45	2.24	4.36	0.01	150
	Annual	0.27	0.18	0.16	0.61	0.00	50
SO_2	3-Hour	19.69	8.26	8.09	14.42	0.17	1,300
	24-Hour	3.76	2.05	1.84	2.81	0.17	365
	Annual	0.09	0.07	0.06	0.27	0.17	80
NO_2	Annual	0.87	0.47	0.47	0.69	0.17	100
CO	1-Hour	1,540.7	1,033.0	1,170.8	1,696.0	0.17	40,000
	8-Hour	32.35	18.92	24.67	52.51	0.17	10,000

Notes: PM_{10} = Particulate Matter smaller than 10 microns; SO_2 = Sulfur Dioxide; NO_2 = Nitrogen Dioxide; CO = Carbon Monoxide
RSIC = Reno/Sparks Indian Colony; NAAQS = National Ambient Air Quality Standards; $\mu g/m^3$ = micrograms per cubic meter

Source: ERM 2000a.

TABLE 4-3
Peak Modeled Ambient Impacts to Nearby Receptors
Reno Clay Plant Project

Criteria Pollutant	Averaging Period	Modeled High ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	Applicable NAAQS ($\mu g/m^3$)
PM_{10}	24-Hour	83.7	26.0	109.7	150
	Annual	8.3	26.0	34.3	50
SO_2	3-Hour	177.4	Not Avail.	177.4	1,300
	24-Hour	37.2	Not Avail.	37.2	365
	Annual	2.7	Not Avail.	2.7	80
NO_2	Annual	18.7	Not Avail.	18.7	100
CO	1-Hour	15,877.5	880.0	16,757.5	40,000
	8-Hour	678.7	880.0	1,558.7	10,000*
Ozone	1-hour	0.01 ppm	Not. Avail.	0.01 ppm	0.12 ppm

Notes: PM_{10} = Particulate Matter smaller than 10 microns; SO_2 = Sulfur Dioxide; NO_2 = Nitrogen Dioxide; CO = Carbon Monoxide
* Nevada CO Standard is 6,000 $\mu g/m^3$ at elevations above 5,000 feet. NAAQS = National Ambient Air Quality Standards; $\mu g/m^3$ = micrograms per cubic meter

Source: ERM 2000a.

Impacts to Class I Areas

Modeling presented in the Air Quality Assessment Report included receptors in the Jarbidge Wilderness Area but not in Yosemite National Park. Predominate wind directions in the Reno area are from the South and Northwest, so the facility is not expected to impact areas to the south. Ambient impacts would be expected to continue to decrease with distance from the site, and the projected impacts in the Yosemite National Park Class I area are expected to be unmeasureable. These emissions are not expected to impact visibility or air quality in the Class I areas.

Alternative A – Chickadee Drive Access Route

Implementation of Alternative A would result in a similar amount and type of air contaminant emissions as the Proposed Action.

Alternative B – South Access Route

Implementation of Alternative B would result in a similar amount and type of air contaminant emissions as the Proposed Action.

No Action Alternative

Under the No Action Alternative, projected impacts to local air quality as described above would not occur, as no mining, hauling, or processing of clay ore would occur in the area. Existing fugitive dust sources would remain at present levels.

MITIGATION AND MONITORING MEASURES

Oil-Dri would collect a minimum of two additional samples in each mine area for metal content analyses. This information would be included in the Plan prior to BLM authorization. Pursuant to Washoe County Air Quality Management Division requirements, Oil-Dri would analyze samples of clay mined on an annual basis to ensure the metal content remains consistent with the data presented in the Plan.

No other mitigation and monitoring measures beyond those described in the *Proposed Action* and *Environmental Protection Measures* sections of Chapter 2 have been identified to reduce impacts to Air Resources.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

No irreversible or irretrievable commitment of air resources would result from the Proposed Action or alternatives.

RESIDUAL ADVERSE EFFECTS

No residual adverse effects on air resources would be anticipated as a result of the Proposed Action or alternatives. After cessation of mining and completion of reclamation activities and in the absence of any new source of emissions in the area, air quality would be expected to return to pre-mining conditions.

AESTHETICS

VISUAL RESOURCES

SUMMARY

Visual impacts of the Proposed Action and alternatives were analyzed using procedures set forth in the Visual Resource Contrast Rating Handbook (BLM 1986b). Changes in the landscape from the Proposed Action and alternatives are compared with the characteristic landscape to determine the degree of contrast in form, line, color, and texture. If the degree of contrast does not meet the Visual Resource Management (VRM) System objectives, the project should be redesigned or mitigation measures

proposed. As noted in Chapter 3, the project site is located on VRM Class IV land, which allows the greatest degree of modification of the landscape by management activities. Implementation of Alternative A or B would have no affect on visual quality. Additional light sources originating from the Processing facility, haul trucks, and mining equipment would contribute to existing residential and Reno-Sparks Indian Colony light sources. However, there are no state or federal standards for limiting light emitted from these sources.

DIRECT AND INDIRECT IMPACTS

Proposed Action

Landform and structural elements such as mine pits, stockpile areas, and processing facilities have the potential to contrast with the characteristic landscape. All of these landform structures would have a low impact, lineal appearance.

The new structures associated with the Processing Facility would introduce moderate visual impacts of lines and geometric shapes to the landscape. Distance and trees would minimize proposed facility lighting impact to the Reno-Sparks Indian Colony.

KOP 1: **Figure 4-1a** shows a simulation of the North Mine Area from KOP 1. The strongest contrasting element here is color. A trapezoidal shape of light colored soil represents the active mine area of exposed clay. The physical size of the impact will not change due to sequential mining and concurrent reclamation.

KOP 2: **Figure 4-1a** also shows a simulation of the North Mine Area from *KOP 2 (a)*. The strongest contrasting element is still color, however much less of a visual impact than *KOP 1*, due to a greater viewing distance. **Figure 4-1b** shows a simulation of the South Mine Area from *KOP 2 (b)*. Only a slight color variation of exposed clay is apparent in the distant middle ground.

KOP 3: **Figure 4-1b** shows a simulation of the South Mine Area from *KOP 3*. Only a slight color variation of exposed clay is visible in the middle ground. The foreground illustrates the visual impact of the new road connecting Hungry Valley Road with Eagle Canyon Drive, that would be constructed with a gravel base and dust treated surface.

KOP 4: **Figure 4-1c** shows simulations of both the North and South Mine areas from *KOP 4*. The view to the north (4a) shows minimal visual impact because of the low viewer angle. The stockpiles and berms in the North Mine Area are obscured from view by a hedgerow of sagebrush along the edge of the runway. The view to the south (4b) shows minimal visual impact because of the low viewer angle. A small portion of the stockpiles is visible on the middle horizon.

KOP 5: **Figure 4-1d** shows the proposed Processing Facility from *KOP 5*. The significance of this *KOP*, under the Proposed Action, is minimized due to location in a low traffic area. The facility attracts viewer attention due to moderate visual contrast with the characteristic landscape.

Reclamation - Visual

Both the North and South Mine areas would use concurrent reclamation where possible. Prior to replacing the one-foot of growth media, disturbed areas would be regraded to near pre-mining contours. The seed mix for revegetation would represent a reclaimed desired plant community and be appropriate for each site. Within a few years the vegetation would allow these areas to blend with the characteristic landscape.

Roads constructed for mining operations would be reclaimed concurrently in the proposed Project area. The recontouring and revegetating of these roads would minimize long-term visual impacts in these areas.

Reclamation of the proposed Processing Facility would include removal of the mill, dryer, and crushing facility. The rest of the buildings would be retained for future commercial use. Stockpiles would be regraded, covered with growth media, and seeded.

These reclamation efforts would reduce, over time, any contrasts associated with the proposed mine areas and would not attract the attention of

a casual observer. Therefore, the Proposed Action would conform to VRM Class IV guidelines.

KOP 1: **Figure 4-2a** shows a simulation of the North Mine Area post reclamation from *KOP 1*. Regrading and revegetation ensure minimal visual contrast.

KOP 2a: **Figure 4-2a** shows a simulation of the North Mine Area post reclamation from *KOP 2a*. Reclamation efforts ensure minimal visual contrast.

KOP 5: **Figure 4-2b** shows a simulation of the proposed Processing Facility from *KOP 5*. Part of the facility has been removed, thereby reducing the long-term visual contrast of structures.

Alternative A – Chickadee Drive Access Route

Visual impacts associated with Alternative A are similar to those for the Proposed Action. The reconstruction and upgrading of Chickadee Drive would not impact visual quality from any of the established KOP's over that of the Proposed Action. Approximately 15-23 transport trucks per day would use Chickadee Drive each day, which would be visible to residents and users of the area.

Alternative B – South Access Route

Implementing Alternative B would result in an additional visual impact associated with the proposed Processing Facility. The South Access Route passes directly to the east of the facility, enabling a view of the facility from the road. Alternative B would allow a viewer the possibility of higher incidence and longer view duration simply by using the South Access Route. Night lighting of the facility would also attract the attention of passing motorists.

Approximately 15-23 transport trucks per day would use the South Access Route each day, which would be visible to residents and users of the area.

Reclamation

KOP 5: **Figure 4-2b** shows a simulation of the Processing Facility with the South Access Route remaining after cessation of mining activities.

No Action Alternative

Under this alternative no new visual impacts related to the mining, hauling, road reconstruction, or processing of clay would occur.

MITIGATION AND MONITORING MEASURES

No mitigation and monitoring measures beyond those described in the *Proposed Action* and *Environmental Protection Measures* sections of Chapter 2 have been identified to reduce impacts to Visual Resources.

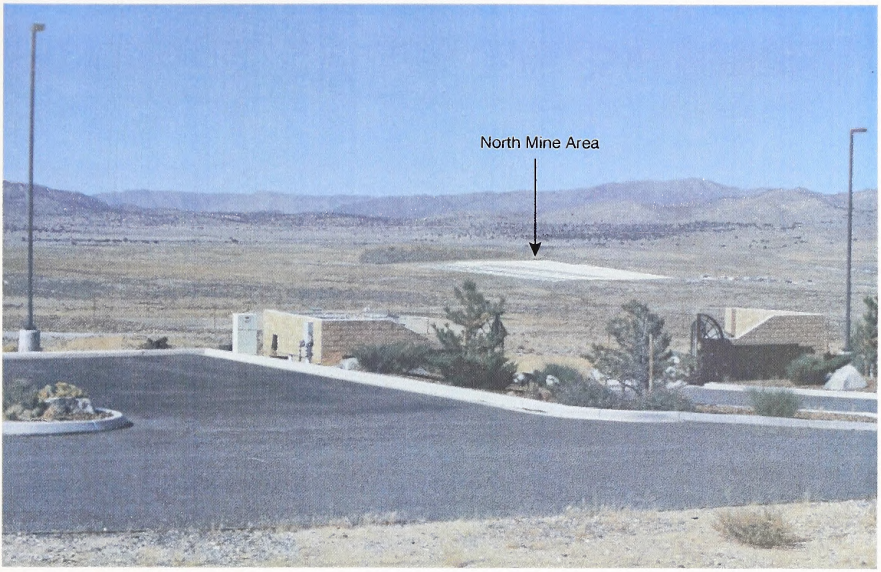
IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

An irretrievable commitment of visual resources would occur during the construction and active mining period until reclamation is successful.

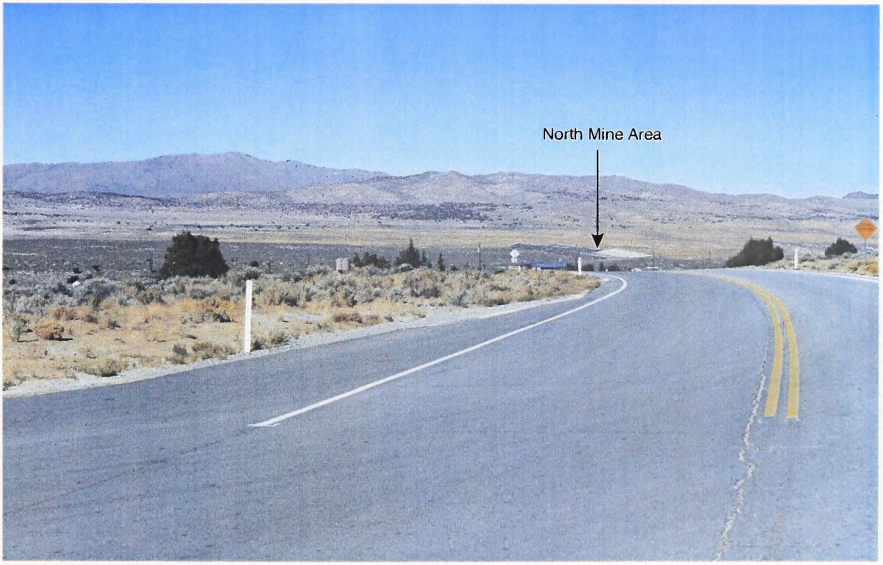
Impacts on visual resources would be reduced through implementation of reclamation and mitigation measures (e.g. low impact lighting).

RESIDUAL ADVERSE EFFECTS

No adverse effects on Visual Resources would be anticipated as a result of the Proposed Action or Alternatives.



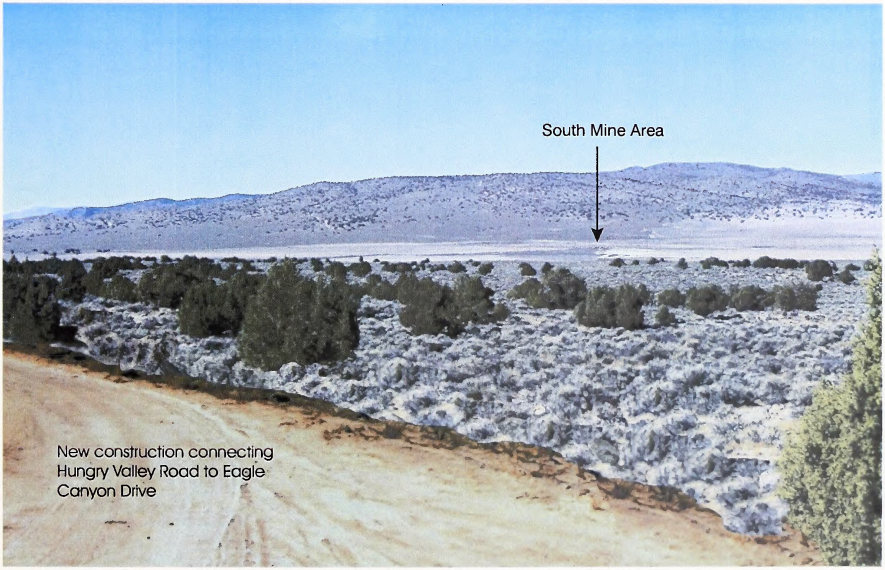
Looking northwest from RSIC cemetery. **KOP 1**



Looking northwest from intersection of Running Deer and Eagle Canyon Drive (RSIC). **KOP 2a**

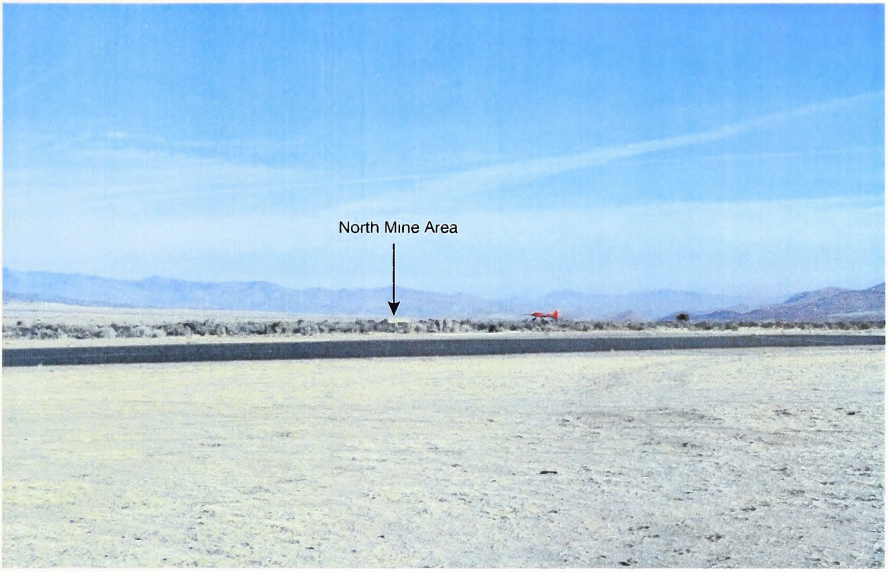
Active Mining Conditions
Oil-Dri Reno Clay Plant
Reno, Nevada
FIGURE 4-1a

Looking southwest from intersection of Running Deer and Eagle Canyon Drive (RSIC). **KOP 2b**

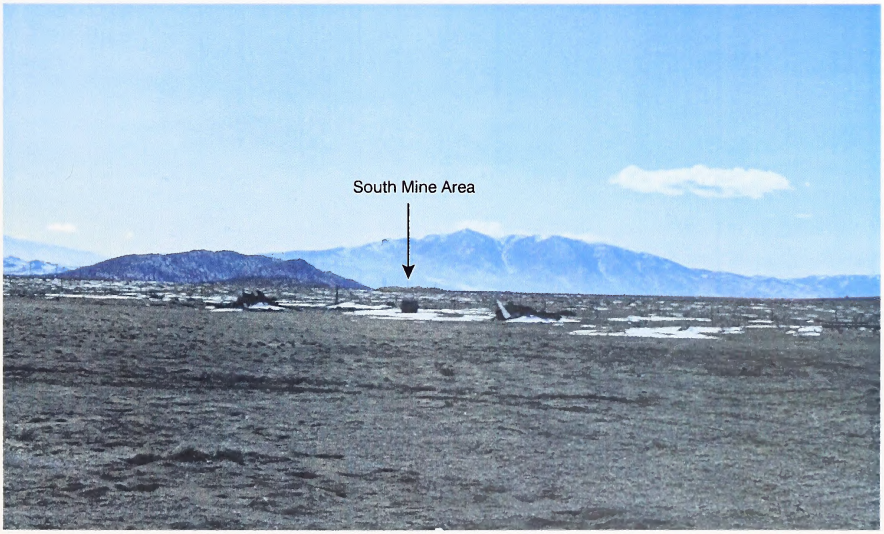


Looking northwest from intersection of proposed new section of Hungry Valley Road and Eagle Canyon Drive. **KOP 3**

Active Mining Conditions
Oil-Dri Reno Clay Plant
Reno, Nevada
FIGURE 4-1b



Looking north from Reno Radio Control Model Airplane Club Airport. **KOP 4a**



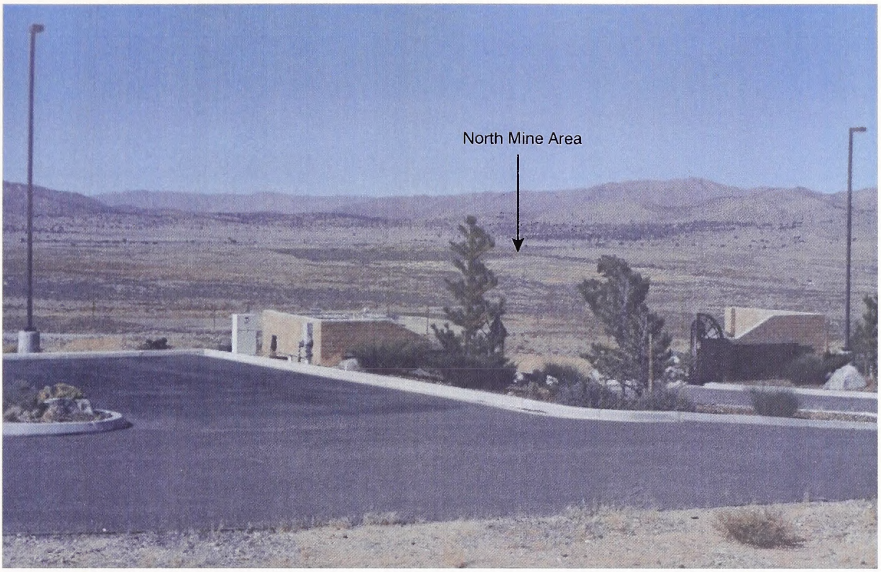
Looking south from Reno Radio Control Model Airplane Club Airport. **KOP 4b**

Active Mining Conditions
Oil-Dri Reno Clay Plant
Reno, Nevada
FIGURE 4-1c

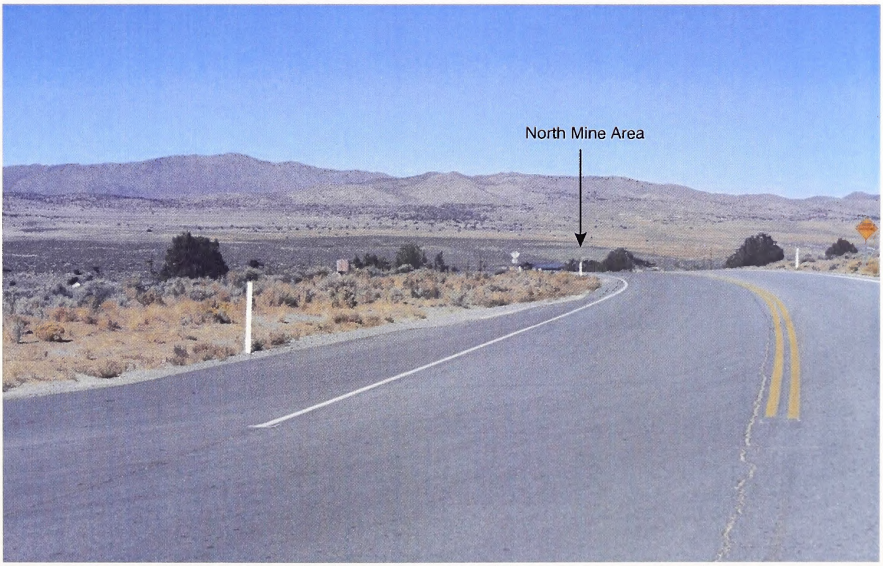
Looking north from South Access Route (1/2 mile south of proposed Processing Facility). **KOP 5**

Looking north from South Access Route (1/2 mile south of proposed Processing Facility). **KOP 5**
Alternative B

Active Mining Conditions
Oil-Dri Reno Clay Plant
Reno, Nevada
FIGURE 4-1d

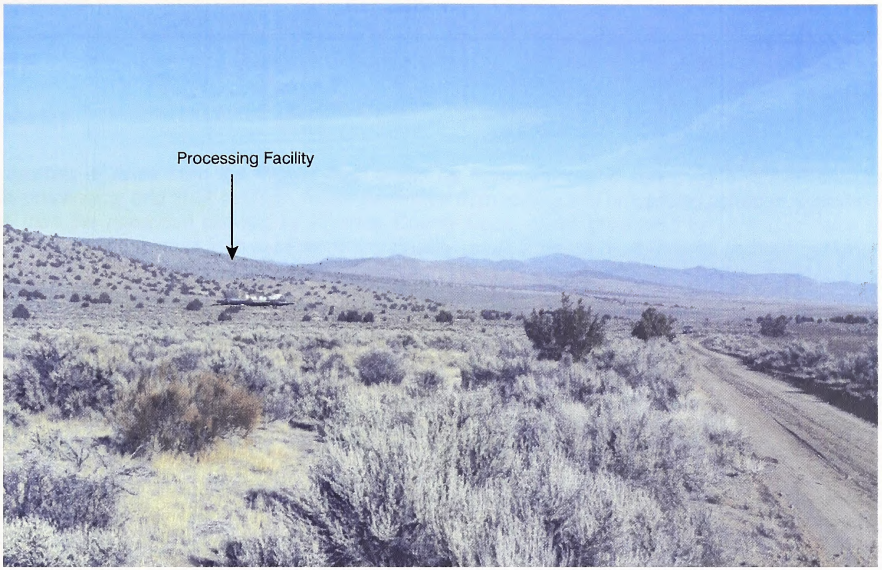


Looking northwest from RSIC cemetery. **KOP 1**



Looking northwest from intersection of Running Deer and Eagle Canyon Drive (RSIC). **KOP 2a**

Reclaimed Conditions
Oil-Dri Reno Clay Plant
Reno, Nevada
FIGURE 4-2a



Looking north from south access road (1/2 mile south of proposed processing facility). **KOP 5**

Looking north from south access road (1/2 mile south of proposed processing facility). **KOP 5**
Alternative B

Reclaimed Conditions
Oil-Dri Reno Clay Plant
Reno, Nevada
FIGURE 4-2b

NOISE

SUMMARY

Major sources of noise from the Project area would be from mining and construction related equipment, material processing, and truck haulage. Noise generated from mining and processing activities is predicted to be less than the maximum allowed by Washoe County Code. Noise generated by increased truck traffic transporting finished product from the Processing Facility would increase along access route(s) but would be of short duration.

DIRECT AND INDIRECT IMPACTS

Proposed Action

To predict noise levels anticipated at the proposed Reno Clay Plant Project, noise level measurements were made at Oil-Dri's Blue Mountain, Mississippi clay processing plant facility on November 11, 2000, and its Simpson Pit mining operation in Georgia on January 11, 2001. Measurements were collected at several locations along the perimeter of the Blue Mountain Processing Facility, and at sites in the vicinity of the Simpson Pit active mine area. The activities and equipment at the Blue Mountain processing facility and Simpson Pit are typical of Oil-Dri's clay processing and mining operations, and would be similar to those proposed for the Reno Clay Plant Project. The maximum measured levels from the Blue Mountain and Simpson Pit sites are shown in **Table 4-4**.

The noise data were used to predict noise levels that would be generated by mining and processing operations at four, selected receptor sites. Receptor sites are shown in **Figure 3-7**. The selected receptor sites are intended to represent *all* the individual locations within a residential development, not *each* individual property, since the predicted noise levels in each development due to the proposed project probably would not vary throughout the development.

TABLE 4-4
Measured Maximum Clay Processing Plant and Mining Area Noise Levels

Operation	Measured $L_{eq}(h)$	Approximate Distance to Noise Source	Sources/Activities
Processing Plant	73 dBA	150 feet	Dust collectors (3), air compressors (5), scrubber, screening tower, forklifts, front-end loader, haul trucks, etc.
Mining	67 dBA	100 feet	Excavator stripping raw material, articulated dump trucks loaded by excavator, trucks ingress/egress pit.

$L_{eq}(h)$ = The equivalent noise level during a one-hour period. The equivalent noise level is the single steady state noise level that has the same acoustical energy as the actual, time-varying noise signal during the same time period.

Source: Oil-Dri 2001.

Calculations were conducted in general accordance with procedures of the International Organization for Standardization (ISO) Standard 9613-2, *Attenuation of Sound During Propagation Outdoors, Part 2: General Method of Calculation.* In an outdoor environment, noise decreases as the distance between the source and receiver increases. Depending on the characteristics of the source and conditions over the path traveled, noise levels typically decrease by approximately 6 dBA as the distance between the source and receiver is doubled. Erection of man-made barriers or natural topography located between the source and receiver tend to reduce noise levels at the receiver.

The L_{dn} (day-night average noise level) at each receptor location was calculated based on the estimated $L_{eq}(h)$ data and the Processing Facility's proposed hours of operation. The Processing Facility would operate continuously for 24 hours each day, while mining operations would operate between 8:00 a.m. and 6:00 p.m. five days per week. To identify potential impacts of the proposed Processing Facility and mining operations on local residents, the predicted noise levels were compared with the estimated existing ambient noise levels, and the *1996 Washoe County Development Code, Article 414 – Noise and Lighting Standards.* Noise impacts at a receptor location were considered to have occurred if the predicted total L_{dn} noise level exceeded 65 dBA as specified in the Washoe County Code, or if the predicted total L_{dn} noise level exceeded the estimated existing ambient L_{dn} noise level by 10 dBA.

Noise levels are not predicted to increase the ambient noise level at permanent residences north of the proposed Processing Facility. Noise from the proposed Processing Facility and mining operations would likely be audible during quiet periods at the Reno-Sparks Indian Colony and at residences along Hungry Valley Road and Chickadee Drive. The noise levels would not be disruptive to persons in those areas since the predicted total L_{dn} noise level is approximately equal to the estimated existing ambient levels. All major equipment used in the Processing Facility would be located inside insulated buildings which would reduce noise. Outside equipment would be equipped with backup alarms for use during daylight hours and backup strobe lights during non-daylight hours to minimize or eliminate noise at night. **Table 4-5** summarizes predicted noise levels in the vicinity of the proposed Project.

Alternative A – Chickadee Drive Access Route

Under Alternative A, no significant change in degree or duration of noise is expected to occur for normal mining operations. Noise would increase along the Chickadee Drive route as a result of increased truck traffic (15-23 trips per day) transporting finished product from the Processing Facility.

TABLE 4-5
Predicted Noise Levels in the Project Area
Reno Clay Plant Project

Receptor Location	Description	Estimated L_{dn} Due to Processing	Estimated L_{dn} Due to Mining	Estimated Existing Ambient L_{dn}	Estimated Total L_{dn}[1]
1	Reno-Sparks Indian Colony	20 dBA	29 dBA	40-45 dBA	40-45 dBA
2	Chickadee Drive Residences	26 dBA	14 dBA	40-45 dBA	40-45 dBA
3	Hungry Valley Road Residences	34 dBA	22 dBA	40-45 dBA	41-45 dBA

L_{dn} = day-night average noise level; dBA = A-weighted decibel sound scale.

[1] The proposed processing, mining, and existing ambient L_{dn} noise levels were calculated logarithmically to estimate the total L_{dn} at a receiver location. Decibels are logarithmic values, and cannot be combined using normal algebraic addition (e.g. the combined noise level of two 50 dBA sources would be 53 dBA, not 100 dBA).

Source: Big Sky Acoustics 2001.

Alternative B – South Access Route

Under Alternative B, no significant change in degree or duration of noise is expected to occur from normal mining operations. Noise would increase along the South Access route as a result of increased truck traffic (15-23 trips per day) transporting finished product from the Processing Facility.

No Action Alternative

Under the No Action Alternative, impacts from noise would not increase beyond current levels.

MITIGATION AND MONITORING MEASURES

No mitigation and monitoring measures beyond those described in the *Proposed Action* and *Environmental Protection Measures* sections of Chapter 2 have been identified to reduce impacts of Noise.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

No resources would be irreversibly or irretrievably impacted by noise generated from the Project.

RESIDUAL ADVERSE EFFECTS AND IMPACTS OF MITIGATION

There would be no residual adverse effects on the environment from the noise generated during mining and processing operations. When mining activity ceases, noise would be reduced to low levels associated with reclamation (recontouring and seeding) and then cease altogether.

WATER RESOURCES

SUMMARY

No surface water exists in the vicinity of the project site except occasional run-off from major precipitation events. Groundwater is not expected to be encountered during open pit mining.

Oil-Dri estimates that up to 13.5 acre-feet of water would be required for material processing, mining activities, and dust control. Withdrawal of this volume of groundwater on an annual basis would result in a lowering of the water table in the vicinity of the Processing Facility. The extent and magnitude of such groundwater drawdown, however, is difficult to predict given existing data.

DIRECT AND INDIRECT IMPACTS

Proposed Action

Surface Water

Surface water drainage within the Project area is limited to ephemeral flow occurring only during and immediately following major precipitation events. In general, precipitation evaporates or seeps into the ground unless saturation occurs, then overland flow can occur (EMA 2000b).

Excavation of the two pit areas would likely cause localized changes in runoff patterns due to modifications in surface elevation contours. Post mining pit depressions would remain after reclamation in the North and South Mine areas. Even with use of best management practices (BMPs), it is likely that the depression(s) would occasionally accumulate water to form a temporary pond during and immediately after major precipitation events. However, infiltration and evapotranspiration would remove water from the pit bottoms. Although BMPs would be employed to prevent run-on of surface water into the pits and overburden stockpiles, some

erosion of pit slopes and material stockpiles may occur. Sediment would accumulate in the pit bottoms and adjacent to any berms or stockpiles. Sediment transport from mined areas would be controlled through use of BMPs (e.g., erosion prevention measures and revegetation) during and after reclamation.

Within the Processing Facility area, localized surface water runoff patterns would change and run-off volumes would increase due to construction of roads, buildings, and Processing Facility structures. However, due to low annual precipitation, effects on the area would be limited to short periods of seasonal run-off. Sediment transport from the Processing Facility would also be controlled through BMPs during mining and after reclamation.

Two developed springs, Hungry Spring and Little Hungry Spring, as described in the Water Resources section of Chapter 3, are located about 2 miles northeast of the North Mine Area. No impacts on these springs are expected due to their distance from the proposed mine areas.

The proposed transportation route via Eagle Canyon Drive would require road improvements to accommodate increased traffic volumes. Because Eagle Canyon is an ephemeral drainage, road improvements would not affect normal surface water quantity and quality. However, during road improvements, construction activities could cause short-term soil erosion as a result of surface water runoff during major precipitation events. Once constructed slopes are stabilized and revegetated, sediment loss would be reduced.

Groundwater

As stated in Chapter 3, limited data are available on depth to groundwater within the Project area. The closest wells to the Project area are approximately 0.5-mile to the east and south of the North Mine Area and 0.5-mile south and west of the South Mine Area. Oil-Dri currently owns sufficient water rights in Lemmon Valley to meet their needs (13.5 million AF/yr). The public water supply for the Reno-Sparks Indian Colony is located in a separate hydrographic basin and therefore will not be affected by the Proposed Action and Alternatives. Groundwater that supplies residential wells northwest of the Processing Facility appears to be poorly-connected to groundwater in the Processing Facility area due to separation of the two areas by a low-permeability granodiorite ridge. Residential wells completed in the granodiorite may experience some drawdown effects as a result of pumping by Oil-Dri at the Processing Facility. Because the quantity of water to be used by Oil-Dri is low (approximately 13.5 acre-feet per year) and the distance to residential wells is over 0.5 mile, the potential for drawdown to affect the residential wells is low (Stantec 2000). Oil-Dri would monitor water wells within 0.5 miles of the Project's production wells. Water levels would be measured monthly providing owners allow access to the respective wells.

Groundwater depths vary within the Project area from 12 to over 400 feet below ground surface. It is possible that limited amounts of localized perched water in surficial alluvium would be encountered during mining; however, the regional groundwater system would not be intercepted by the mine pits. If encountered, water would be removed and used for dust suppression.

Temporary or seasonal ponding in the mine pits during major precipitation events may increase infiltration rates within the pit areas. However, because annual precipitation in the Hungry Valley area is approximately 8 inches per year, the amount of water available to infiltrate into the soil and recharge the aquifer is minimal in the mine pit areas. In addition, clay horizons in the deposit would act to seal the bottom of the pits and limit the vertical movement of water.

According to meteoric water mobility tests performed by Sierra Environmental Monitoring, Inc. in December 2000 on clay ore and overburden from both pit areas, precipitation infiltrating through overburden piles and clay ore could result in release of arsenic in concentrations that exceed the drinking water quality standard. Tests show that concentrations of arsenic in water from two of the four tests were above the primary drinking water standard of 0.01 milligrams per liter (mg/l). Arsenic concentrations of South Mine Area overburden and North Mine Area clay were 0.07 and 0.085 mg/l, respectively. In addition, concentrations from the meteoric water mobility test for aluminum, iron, and total dissolved solids exceeded secondary drinking water standards on selected test samples.

The test described above uses a very aggressive method of determining the metal leaching potential for the material tested. Actual field conditions would allow less disturbed material surface area in contact with water, which would reduce the metal leaching potential. In addition, during and after reclamation, vegetation established in the pit bottoms, side slopes and overburden piles would reduce the amount of recharge to the aquifer by increasing evapotranspiration. Published data by Jacobs et al., 1970 and Elkhatib et. al., 1984, has shown that soil, particularly soil with relatively high clay and iron oxide content, has the potential to attenuate dissolved arsenic as water infiltrates through the soil matrix.

Based on a hydraulic conductivity of 1×10^{-6} cm/sec., an effective porosity of 0.40, and an assumed depth to groundwater of 330 feet, the time required for infiltrating water to reach the water table would be at least 128 years.

Due to attenuation of metals that would occur in the unsaturated geologic material beneath the pit bottoms and overburden piles, reduction of infiltration by evapotranspiration, and distance to the nearest beneficial use of groundwater, quality of groundwater should not be adversely affected in the Project area due to the Proposed Action.

Alternative A – Chickadee Drive Access Route

Implementation of Alternative A would result in the same amount and type of water resource impacts as described for the Proposed Action. Surface water would not be affected because Chickadee Drive does not cross a surface water drainage channel. The extent of soil erosion due to surface water runoff would likely be less than the proposed Eagle Canyon Drive route due to steeper slopes associated with the Eagle Canyon Drive route versus the Chickadee Drive route.

Alternative B – South Access Route

Implementation of Alternative B would result in the same amount and type of surface water resource impacts as described for the Proposed Action. Surface water is not normally present along the South Access route. An increase in disturbed area would result from implementation of Alternative B because the South Access route would consist of a newly constructed road. Soil erosion due to surface water runoff on disturbed areas would be controlled by BMPs and is, therefore, expected to be similar to the Proposed Action.

No Action Alternative

The No Action Alternative would eliminate potential impacts of the Proposed Action on water resources.

MITIGATION AND MONITORING MEASURES

In conjunction with the sampling required under the Air Resources section, Oil-Dri would sample and analyze clay material mined on an annual basis to determine the leachable metal content of the clay. These analyses would be submitted to BLM annually.

No other mitigation and monitoring measures beyond those descried in the *Proposed Action* and *Environmental Protection Measures* sections of Chapter 2 have been identified to reduce impacts to Water Resources.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

No irreversible or irretrievable commitment of water resources would result from the Proposed Action or alternatives.

RESIDUAL ADVERSE EFFECTS

No residual adverse effects on water resources would be anticipated as a result of the Proposed Action and mitigation measures. Groundwater would be withdrawn and consumed for the Project. However, after cessation of mining and completion of reclamation activities, water quality and quantity would be expected to return to pre-mining conditions.

SOIL

SUMMARY

The proposed Project would result in approximately 345 acres of surface disturbance. Potential impacts on soil resources would include loss of soil during salvage and replacement, sediment loss due to erosion, and reduced biological productivity. These impacts are expected to be minimized, to the extent possible, following successful reclamation of the disturbed land. Some disturbed areas such as primary haul roads will not be reclaimed following completion of the Project. Loss of soil and interruption of natural soil processes and functions would be reversed by natural soil development over time. Reclamation efforts (e.g., adding soil amendments) would expedite soil development.

Impacts to soil resources under Alternative A would be the same as the Proposed Action. Implementation of Alternative B would result in greater impacts to soil resources compared to the Proposed Action.

DIRECT AND INDIRECT IMPACTS

Impacts on soil resources occur in two separate stages during mining operations: 1) soil loss during mining, when salvaged topsoil (growth media) is stockpiled and stabilized in storage areas; and 2) soil loss between redistribution of growth media and completion of reclamation. Although impacts to soil are greater during mining, potential erosion during and after growth media redistribution would have a greater effect on final reclamation.

Proposed Action

Direct impacts on soil resources from the Proposed Action would include modification to soil chemical and physical characteristics, loss of soil to wind and water erosion, and decreased soil biological activity over a surface disturbance area of approximately 345 acres. Chemical changes would result from mixing surface soil with subsoil during salvage activities, and reducing the amount of organic matter in surface soil. Impacts on physical characteristics of soil during salvage, stockpiling, and redistribution would include soil mixing, compaction, and pulverization from equipment and traffic. Soil compaction and pulverization would result in decreased permeability and water-holding capacity, and loss of soil structure and finer-grained soil material due to erosion.

Soil loss from wind erosion is potentially high in Nevada's arid, windy climate. The potential for loss of salvaged soil due to wind would be greatest during reclamation after redistribution of growth media on disturbed areas. The potential for loss of subsoil would be greatest between initial disturbance and redistribution of growth media. The volume of soil loss would depend on wind velocity, size and condition of exposed area, and soil texture.

Water erosion potential could be high during heavy precipitation due to exposed soil, fine soil texture, soil surface conditions, and slope. However, management practices such as run-off control berms, mulching, addition of organic matter, interim seeding, or leaving the slope in a roughened condition would reduce losses. Soil loss due to water erosion would be limited because soil would be captured in the active pit or in run-off control ditches. Soil would be removed from the ditch system as needed to maintain ditch capacity. This soil would be used in reclamation.

Redistributed soil would have a lower organic matter content as a result of salvage and stockpiling. Soil biological activity would be reduced or eliminated during stockpiling as a result of anaerobic conditions created in deeper portions of stockpiles. After soil redistribution, biological activity would slowly increase and eventually reach pre-salvage levels.

Redistribution of soil during reclamation would result in soil loss and compaction from loading, hauling, and placement. Soil loss would continue until vegetation became established.

Indirect impacts on other resources caused by soil disturbance from the Proposed Action include decreased vegetative productivity due to soil loss or inadequate cover soil depth.

Alternative A – Chickadee Drive Access Route

The Chickadee Drive Access Route incorporates all components of the Proposed Action except approximately 5 acres of surface disturbance associated with upgrading Eagle Canyon Drive would not occur. Approximately 2.3 acres of surface disturbance would occur as a result of widening 1.25 miles of Chickadee Drive from 20 feet to 35 feet. Alternative A would result in a decrease of 2.7 acres of disturbance as compared to the Proposed Action.

Alternative B – South Access Route

The South Access Route incorporates all components of the Proposed Action except approximately 5 acres of surface disturbance associated with upgrading Eagle Canyon Drive would not occur. Approximately 7.1 acres of surface disturbance would occur as a result of widening from 20 feet to 35 feet on 3.9 miles of the South Access Route. Implementation of Alternative B would result in an increase in disturbance area of 2.1 acres compared to the Proposed Action.

No Action Alternative

The No Action Alternative would eliminate potential impacts of the Proposed Action on soil resources.

MITIGATION AND MONITORING MEASURES

No mitigation and monitoring measures beyond those described in the *Proposed Action* and *Environmental Protection Measures* sections of Chapter 2 have been identified to reduce impacts to Soil.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Soil loss as a result of natural or man-caused forces would be irreversible and irretrievable.

RESIDUAL ADVERSE EFFECTS

Loss of soil and interruption of natural soil processes and functions (e.g., soil development, infiltration, percolation, water holding capacity, structure, and organic matter) can be reversed by natural soil development over an unknown period. Reclamation efforts would expedite those processes. Loss of vegetation productivity as a result of soil impacts and land uses could be reversed within five to 10 years after successful reclamation.

VEGETATION RESOURCES

SUMMARY

Implementing the Proposed Action or alternatives would result in disturbance to approximately 305 acres of public land and 40 acres of private land over the life-of-mine. The area is dominated by a Douglas rabbitbrush community with shadscale, four-wing saltbush, rabbitbrush, and spiny hopsage. Native grasses present are Indian ricegrass and bottlebrush squirreltail. This community type is widespread throughout the Basin and Range Physiographic Province.

The South Mine and Processing Facility areas burned in 1999 and 2000 and currently have little or no vegetation. Therefore mining operations in the South Mine Area would have minimal impact. Reclamation activities would be concurrent with backfilling operations on mined-out portions of each mine.

DIRECT AND INDIRECT IMPACTS

Proposed Action

The Proposed Action would directly impact vegetation at the North and South Mine areas, construction and operation of a Processing Facility, upgrading of access and haul roads, and continued exploration activities in the Project area. Construction would result in temporary loss of vegetation in the North and South Mine areas as reclamation activities would be concurrent with backfilling operations on mined-out portions of each mine. The primary impacts of mine operations on vegetation would be the removal of woody shrubs in construction areas and soil disturbances that could remove or damage seeds stored in the soil.

The Project area does not contain any known riparian or wetland vegetation therefore no impact is expected. Vegetation removal and soil disturbance may create favorable conditions for noxious weeds. Minimization of soil exposure as well as successful revegetation would mitigate noxious weed establishment.

Currently no weed species listed by the BLM or contained in the Nevada Noxious Weeds List are located within the proposed disturbance areas. Cheatgrass contributes about 57 percent of vegetative cover throughout the Project area and adjacent undisturbed areas. In the burned areas of the South Mine and Processing Area, cheatgrass is expected to become established initially and eventually would be replaced by native vegetation.

Alternatives A – Chickadee Drive Access Route

Implementation of Alternative A would have no change on potential impacts to vegetation resources in the Project area compared to the Proposed Action.

Alternative B – South Access Route

Impacts to vegetation from implementation of Alternative B would be the same as those described for the Proposed Action.

No Action Alternative

Vegetation resources in the Project area would not be directly or indirectly impacted by implementation of the No Action Alternative since no soil disturbance associated with mining activities would occur.

MITIGATION AND MONITORING MEASURES

Oil-Dri would .prepare and submit a Noxious Weed Management plan to BLM prior to approval of the Plan.

No mitigation and monitoring measures beyond those described in the *Proposed Action* and *Environmental Protection Measures* sections of Chapter 2 have been identified to reduce impacts to Vegetation Resources.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

There would be an irreversible loss of vegetation resources in portions of the Project area where reclamation would not occur (e.g. haul roads). Vegetation productivity would be lost from disturbed sites until successful reclamation and revegetation efforts are complete.

RESIDUAL ADVERSE EFFECTS

Residual adverse impacts would remain in areas where no reclamation is to occur, such as where permanent structures are built and primary haul roads widened to accommodate increased traffic.

RANGE RESOURCES

SUMMARY

The Proposed Action would impact less than 0.5 per cent of the Paiute Grazing Allotment acreage in the Project area over the life-of-mine. The South Mine Area lies in the Shovel Springs pasture which burned in 1999 and 2000 and is currently closed to grazing until 2002. A portion of the North Mine Area lies within the 14 square mile (9,000 acres) Hungry Valley pasture, which is used on a rotational basis. Implementation of Alternative A, B, or the No Action Alternative would not impact current grazing practices in the Project area.

DIRECT AND INDIRECT IMPACTS

Proposed Action

Approximately 305 acres of surface disturbance would occur on public land over the life-of-mine. Reclamation activities would be concurrent with backfilling operations on mined-out portions of each mine. Available grazing pasture would be lost in the short term until successful revegetation is complete.

The Project lies within the Paiute Grazing Allotment. Portions of this allotment cover the North and South Mine areas. Specifically, the North Mine Area is partially within the Hungry Valley pasture and the South Mine Area within the Shovel Springs pasture. The Hungry Valley pasture is over 14 square miles (approximately 9,000 acres). The Shovel Springs allotment is over 20 square miles (approximately 12,000 acres). The Shovel Springs pasture was burned in 1999 and 2000 and is currently closed to grazing until 2002.

The Paiute Grazing Allotment is approximately 71,000 acres. Project development would result in a temporary impact of approximately 60 acres at any one time or 0.08 percent of total grazing capacity. There would be some small loss of grazing capacity. However this would be a minor impact due to the rotational use of pasture, abundance of rangeland in the Paiute Allotment, and the fact the Shovel Springs pasture is closed.

Alternative A – Chickadee Drive Access Route

Impacts to range resources from implementation of Alternative A would be the same as those described for the Proposed Action.

Alternative B – South Access Route

Impacts to range resources from implementation of Alternative B would be the same as those described for the Proposed Action.

No Action Alternative

Implementation of the No Action Alternative would not impact current grazing practices or range resources in the Project area. No soil disturbance would occur and current stocking rates would continue to be permitted.

MITIGATION AND MONITORING MEASURES

No mitigation and monitoring measures beyond those described in the *Proposed Action* and *Environmental Protection Measures* sections of Chapter 2 have been identified to reduce impacts to Range Resources.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Grazing capacity on mine-related disturbance areas would be lost until vegetation becomes established.

RESIDUAL ADVERSE EFFECTS

Residual adverse impacts would remain in areas where no reclamation is to occur, such as primary haul roads widened to accommodate increased traffic.

WILDLIFE RESOURCES

SUMMARY

Primary impacts on terrestrial wildlife resulting from the Proposed Action at the Reno Clay Plant Project site would be loss of habitat and subsequent displacement of wildlife. Direct loss of wildlife habitat would eliminate cover (nesting, hiding, and thermal), breeding sites, and forage. Most of the affected habitat within the Project area consists of big basin sagebrush and Douglas rabbitbrush communities. Mining operations in the North and South Mine areas would disturb approximately 271 acres of habitat over the life-of-mine. Construction of access and haul roads, continued exploration, and construction of the Processing Facility would disturb an additional 74 acres of habitat over the life-of-mine.

Implementation of the Proposed Action or alternatives is not expected to add to the pressure currently exerted on these resources in a manner that would increase hardship for regional wildlife. Aside from the 345 acres of surface disturbance and the associated human activity, alterations to existing natural resources in this area as a result of the Proposed Action would be negligible.

DIRECT AND INDIRECT IMPACTS

Proposed Action

The Proposed Action at the Reno Clay Plant project would result in the incremental surface disturbance of approximately 345 total acres, including 305 acres of public land and 40 acres of private land. Terrestrial wildlife currently using the land may become incorporated into contiguous populations in the surrounding habitat. Species most likely to be impacted by the Proposed Action would be those less able to adapt to change. Because of their inability to rapidly move great distances, reptiles and small mammals would be most harshly impacted by surface disturbance. Fatalities suffered by these species are expected to be very low. Individual animals unable to relocate or adjust to being displaced would die. However, due to the abundance of similar sagebrush habitat surrounding the area of proposed disturbance, prolonged adverse affects on wildlife populations in the area are not expected.

Alternative A – Chickadee Drive Access Route

Impacts associated with implementation of Alternative A would be similar to those described for the Proposed Action.

Alternative B – South Access Route

Impacts associated with implementation of Alternative B would be similar to those described for the Proposed Action.

No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. The No Action Alternative would not impact area wildlife other than what already occurs in the Project area.

MITIGATION AND MONITORING MEASURES

No mitigation and monitoring measures beyond those described in the *Proposed Action* and *Environmental Protection Measures* sections of Chapter 2 have been identified to reduce impacts to Wildlife Resources.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The Proposed Action proposes reclamation of all disturbed areas to the extent that they would support wildlife habitat, domestic grazing, dispersed recreation, and mineral exploration and development. Reclamation methods would be employed that are technically effective, cost efficient, and require no post-reclamation

maintenance to ensure continued performance. Disturbed surfaces would be re-established to support self-sustaining vegetation communities and minimize erosion. Wildlife diversity would likely recover to pre-mining levels shortly after mining ceases and reclamation has been completed.

RESIDUAL ADVERSE EFFECTS

No residual adverse impacts to terrestrial wildlife are expected from the proposed project. Impacts of mitigation measures described above would be positive.

SPECIAL STATUS SPECIES

SUMMARY

Threatened, endangered, candidate, or sensitive species or their habitat would not be affected by the Proposed Action or Alternatives because none of these species are known to use habitat in the Project area. Two special status species that have habitat in the Project area are the pygmy rabbit and the Western burrowing owl. Neither of these species has been documented in the Project area. Sensitive and rare plants listed by BLM do not occur in the habitats and communities existing in the Project area.

DIRECT AND INDIRECT IMPACTS

Proposed Action

Implementation of the Proposed Action would have the potential to reduce the habitat for the pygmy rabbit and Western burrowing owl. Although no known occupied habitat exists in the Project area, loss of sagebrush habitat would have the potential to reduce amounts and quality of breeding and foraging habitat for these species. Losses in foraging and breeding habitat would be small and incremental, with no discernible effect on regional populations. The viability of species or populations likely would not be affected.

Alternative A – Chickadee Drive Access Route

Impacts on special status species under Alternative A would be similar to those described for the Proposed Action.

Alternative B – South Access Route

Impacts on special status species under Alternative B would be similar to those described for the Proposed Action.

No Action Alternative

Implementation of the No Action Alternative would not affect special status species in the Project area.

MITIGATION AND MONITORING MEASURES

No mitigation and monitoring measures beyond those described in the *Proposed Action* and *Environmental Protection Measures* of Chapter 2 have been identified to reduce impacts to Special Status Species.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

With successful reclamation of disturbed areas, there would be no irreversible commitment of resources.

RESIDUAL ADVERSE EFFECTS

No residual adverse impacts to special status species are expected from the proposed Project. Reclamation of disturbed areas to support self-sustaining vegetation communities would be positive.

LAND USE AND ACCESS

Summary

Land Use

The Proposed Action would result in approximately 305 acres of disturbance on public land and 40 acres of disturbance to private land in the Hungry Valley over the life of the project. While land ownership would remain unchanged, grazing and recreational use of the mine areas would be precluded over the life of the project. Following reclamation activities at the end of the operative life of the Proposed Action, the land in the North and South Mine areas would be returned to pre-mining uses.

Access

Under the Proposed Action, Eagle Canyon Drive would be the principal access route for mine truck traffic and up to 70 per cent of mine employees. This would result in an increase of approximately 93 additional round trips per day along Eagle Canyon Drive (70 employee and 23 truck trips). Approximately 30 percent of employees are expected to access the Mine and/or Processing area via Chickadee Drive resulting in an increase of up to 30 roundtrips per day along this route. Under Alternatives A and B, 100 per cent of the daily product transport would be required to use either Chickadee Drive (Alternative A) or the South Access Route (Alternative B). Based on projected employment of a maximum 100 persons, the project is a low level traffic generator and does not affect the Reno Regional Traffic Commission's level of service criteria for major and minor arterials, and collector roads (Solaegui Engineers, Ltd. 2000).

DIRECT AND INDIRECT IMPACTS

Proposed Action

Land Use

Under the Proposed Action, active mine areas would not be available for recreational use or grazing until reclamation is complete. Those engaged in activities that require unrestricted use of the valley would need to adjust to the presence of the mine by relocating or modifying their activities in the valley. Exploration activities on land outside of the proposed mine areas may also require that grazing and/or recreation activities temporarily relocate to avoid conflicting uses, noise, or other disturbance. Recreationists may drive further into the valley to find a suitable location for their activity or avoid that portion of the Hungry Valley altogether.

Land use in the Spanish Springs and Lemmon Valley areas would not be expected to change as a result of the Proposed Action. Land use plans for these areas would continue as described in the Washoe County Comprehensive Plan.

Access

Three access routes to the project site are under consideration: Eagle Canyon Drive, Chickadee Drive, and the South Access route. The Proposed Action and Alternatives provide for various distributions of employee and truck traffic along these routes. The Proposed Action indicates that 70 per cent of employee traffic and 100 per cent of truck traffic would use Eagle Canyon Drive to access the Project area. The remaining 30 percent of employee traffic would use Chickadee Drive from the west to access the area. These routes are shown on **Figure 2-7.**

Oil-Dri anticipates employing approximately 100 people. At full production, approximately 23 truck/trailer trips per day (six days per week) would be required to transport finished product. This haulage would result in an increase of approximately 93 roundtrips per day on Eagle Canyon Drive (70 employees plus 23 truck trips), or a total of 186 trips per day. Approximately 60 trips per day would be incurred along the Chickadee Drive route.

According to a traffic analysis prepared in 2000 at the request of Oil-Dri, the increased traffic

would not affect the existing level of service rating established by the Reno Regional Traffic Commission for any of these routes. The findings of the traffic analysis indicate that overall, the project is a low traffic generator that by itself does not trigger need for roadway widening on any roadway segment in the proposed access scenarios (Solaegui Engineers, Ltd. 2000).

Alternative A – Chickadee Drive Access Route

Land Use

Under Alternative A, impacts to land use would be similar to those described for the Proposed Action.

Access

Under Alternative A, all project truck haulage would be required to use the Chickadee Drive route. This alternative would reduce haul truck and traffic on Eagle Canyon Drive, but would increase traffic on Chickadee Drive as compared to the Proposed Action. According to the traffic analysis prepared for the project by Solaegui Engineers, Ltd., the assignment of project traffic to this route would not affect the level of service rating established by the Reno Regional Traffic Commission for Chickadee Drive.

Alternative B – South Access Route

Land Use

Under Alternative B, impacts to land use would be the same as those under the Proposed Action.

Access

Alternative B would use the South Access route via Estates Road through Golden Valley as primary access to the Project area. This alternative would reduce haul truck traffic on Eagle Canyon Drive, but would increase traffic on Estates Road and Golden Valley Road as compared to the Proposed Action, by 246 trips per day (60 trips per day previously assigned to Chickadee Drive and 186 trips per day previously assigned to Eagle Canyon Drive).

According to the traffic analysis prepared for the project by Solaegui Engineers, Ltd., the assignment of project traffic to this route would not affect the level of service rating established by the Reno Regional Traffic Commission for the Golden Valley Road-Estate Road route.

No Action Alternative

Land Use

Under the No Action alternative, land use in the Hungry Valley and surrounding area would remain as it exists.

Access

If the Oil-Dri project is not authorized, impacts associated with increased traffic along the proposed and alternate access routes would not occur.

MITIGATION AND MONITORING MEASURES

No mitigation and monitoring measures beyond those described in the *Proposed Action* and *Environmental Protection Measures* sections of Chapter 2 have been identified to reduce impacts to Land Use and Access.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Land affected by mining under the Proposed Action would be reclaimed to pre-mining conditions. Current land use would not be irreversibly or irretrievably modified.

RESIDUAL ADVERSE EFFECTS

No residual adverse effects on land use and access are anticipated since reclamation of disturbed surfaces would restore land to pre-mining uses, including recreation, wildlife habitat, and grazing.

RECREATION

SUMMARY

Current BLM land use policy for the Hungry Valley area allows for a variety of activities, including recreation, mining, and grazing. Recreational opportunities in the Hungry Valley include organized events, such as motorcycle races, dog trials, and equestrian events. This area also provides open space for diverse recreational activities such as hiking, horseback riding, hunting, mountain biking, cross-country motorcycling, and off-highway vehicle (OHV) use. The BLM's Carson City Field Office manages organized events in the Hungry Valley to reduce potential for user conflict; however, diverse activities are generally unrestricted as to when and where they may occur. Some land has been designated for specific uses; the Reno Radio Control Model Airplane Club holds a Recreation and Public Purposes (R&PP) lease on approximately 10 acres in the valley. In addition, restrictions are in place to allow for revegetation of the acreage burned by wildfire on the west side of the valley.

Under the Proposed Action and alternatives, recreational users of the land in the Hungry Valley and immediate vicinity would potentially be required to find other locations for specific activities and events or event staging areas. In addition, recreational users may incur additional access restrictions in the proposed mine areas and haul routes, and would need to relocate to avoid potential conflict with mining activities.

DIRECT AND INDIRECT IMPACTS

Proposed Action

Oil-Dri holds mining claims on approximately 5,827 acres (Project area) of public land in Hungry Valley currently used for dispersed recreation activities and grazing. During the 20-year life-of-project, Oil-Dri would disturb approximately 136 acres of public land at the North Mine Area and 135 acres in the South Mine Area. Additional disturbance in the Project area includes 15 acres for upgrade and construction of access and haul roads, and approximately 20 acres for continuing exploration activities.

Off-highway vehicle (OHV) enthusiasts are probably the largest group of dispersed recreationists using public land in the Project area. BLM administers land within the Reno-Sparks metropolitan area, including Hungry Valley and land encompassing the Project area.

During the life of the project, mining activities would affect less than one percent (approximately 305 acres) of public land available for dispersed recreational activities in Hungry Valley. Activities that require large areas of open space, such as motorcycle races, horseback riding, dog trials, cattle drives, and "coyote chasing" may occasionally intercept active mine areas and haul routes. Individuals participating in these activities would need to alter their routes or relocate to other areas to avoid contact with mining operations. Upon completion of mining and reclamation activities these areas would be returned to pre-mining uses.

Since BLM coordinates organized events through a permit system, activities that currently take place on or near the proposed mine areas would be relocated to other areas in Hungry Valley. Since most organized recreational activities occur on weekends, and mining operations occur Monday through Friday the resulting impacts to events would be considered minor considering the large amount of available public land remaining in the valley and the relative infrequency of these events.

Hunting is not a predominant dispersed activity in the Project area. According to Nevada Division of Wildlife, less than 20 resident permits for mule deer were issued in 1999 for hunting in game management unit 021 that encompasses Hungry Valley. Less than 10 permits for pronghorn have been issued annually for the past three hunting seasons in two combined

game management units in the area, including unit number 021. No evidence of mule deer or pronghorn was recorded during a reconnaissance of the Project area during January 2000. Given the small percentage of public land affected by the Proposed Action, impacts to big game hunting are expected to be negligible both in terms of the availability of game species and remaining habitat. Statistics were not available for upland game bird hunting; however, it is expected that impacts to bird hunting would also be minimum given the large amount of available habitat remaining in the valley.

Impacts to persons using the valley for dispersed recreational activities such as hiking, jogging, mountain biking, and cross-country skiing would include exposure to noise disruptions from heavy equipment, dust, and observance of visual impacts on the landscape – all of which may negatively impact the sense of solitude or sense of "openness" enjoyed during these types of activities. Users may resort to increasing driving distance to other locations in the valley to avoid these impacts. However, given the remaining amount of land in the valley available for dispersed recreational activities and the relatively few people who use the public land in the vicinity of the project for these purposes, these types of impacts are considered minor because the project does not preclude these uses altogether but rather requires adaptation or relocation to other areas within the valley.

Members of the Reno Radio Control Model Airplane Club lease approximately 10 acres of land for their use under an R&PP lease with BLM. Club members would share the haul road to access their site during times of mining operations (Monday through Friday); however, their ability to use the leased land for model airplane activities would not be impeded due to the Proposed Action.

Alternative A – Chickadee Drive Access Route

Impacts to recreation under Alternative A would include increased traffic at a primary route of access for those who use Hungry Valley area for recreation. Increased traffic on Chickadee Drive would not be expected to decrease participation in organized events or activities scheduled in the valley. All other impacts to recreation would likely be similar to those under the Proposed Action.

Alternative B – South Access Route

Impacts to recreation under Alternative B are expected to be similar to those under either the Proposed Action or Alternative A.

No Action Alternative

Under the No Action Alternative, recreation in the valley would continue as it presently exists.

MITIGATION AND MONITORING MEASURES

No mitigation and monitoring measures beyond those described in the *Proposed Action* and *Environmental Protection Measures* sections of Chapter 2 have been identified to reduce impacts to Recreation.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The Proposed Action would not irreversibly or irretrievably affect recreation resources. Following reclamation shallow, undulating depressions ranging in depth from approximately 15 to 40 feet would remain in the North Mine Area and 10 to 20 feet in the South Mine Area. The pit would be contoured to achieve 4H:1V side slopes. OHV users would likely take advantage of the pits as topographical "features" that enhance enjoyment of that activity.

RESIDUAL ADVERSE EFFECTS

Following reclamation of the proposed mine areas, depressions would remain in the North and South Mine areas. The depressions would be 10-40 feet deep and contoured to achieve 4H:1V side slopes. To some who use the valley for recreation, this pit would possibly be considered adverse because of the altered character of the valley. However, others, like OHV users, would potentially consider the pit as "enhancement" that adds to the pleasure of their sport.

CULTURAL RESOURCES

SUMMARY

Cultural resource sites would be directly impacted by the Proposed Action. Oil-Dri would develop a data recovery plan for implementation at any impacted National Register eligible properties prior to project initiation.

DIRECT AND INDIRECT IMPACTS

For purposes of impact analysis, the area of potential effect is defined as the area subject to surface disturbance. The area that may be subject to indirect impact extends from the crest line running through Hungry Mountain on the west to the crest line of Hungry Ridge on the east, and, two miles to the north and south of surface disturbance associated with the Proposed Action or Alternative A or B.

Proposed Action

Inventories have been conducted of most areas subject to direct impact. A portion of Eagle Canyon Drive and the proposed power line extension require examination. Studies conducted to date indicate the Proposed Action would impact several cultural resources. The National Register eligibility of these resources has yet to be determined based on consultation between BLM and the Nevada State Historic Preservation Office. Once the eligibility determination process has been completed, impacts to National Register eligible properties can be assessed and mitigation needs determined.

There is a possibility that cultural resources may be discovered inadvertently during construction and/or operation of the Proposed Action. If one or more of those sites were National Register eligible, then a direct impact would occur to those sites as a result of the Proposed Action. Given the geomorphic context of Hungry Valley, cultural material appears to be limited to current ground surface, or to shallow depth below ground surface (Young et. al. 2000).

Numerous studies have been conducted in the area subject to indirect impacts. Of the sites identified as a result of those studies, most are prehistoric period sites. Indirect impacts to data potential of any known or anticipated properties would occur as a function of distance. Eligible properties located near the Processing Facility, or the North or South Mine areas would have a greater potential for indirect impacts. In contrast, properties located in the hills around Hungry Mountain or along Hungry Ridge are less likely to be impacted.

To date, none of the National Register eligible properties located in the area subject to indirect effects are eligible for reasons other than their data potential (e.g., National Register criteria A, B, or C). As a result, the Proposed Action would not have the potential to affect the integrity (visual, auditory, social, or land use effects, impacts on cultural integrity, or impacts on cultural uses of the landscape) of known eligible properties.

Surface disturbance conducted as part of the Proposed Action has the potential to remove or disrupt native plant populations. A field visit of the proposed Project area was conducted with interested tribal members. Plants unique to the Project area were not identified.

Alternative A – Chickadee Drive Access Route

National Register properties are not present along the west access route. Direct and indirect impacts associated with Alternative A would be the same as those discussed for the Proposed Action.

Alternative B – South Access Route

National Register properties are not present along the South Access Route (Young et al. 2000). Direct and indirect impacts associated with Alternative B would be greater than those discussed for the Proposed Action.

No Action Alternative

Direct and indirect impacts to cultural resources would not occur as a result of the No Action Alternative.

MITIGATION AND MONITORING MEASURES

No mitigation and monitoring measures beyond those described in the *Proposed Action* and *Environmental Protection Measures* sections of Chapter 2 have been identified to reduce impacts to Cultural Resources.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Cultural resources are by their nature irreplaceable. Therefore, the alteration or elimination of any such resource, be it National Register eligible or not, represents an irreversible and an irretrievable commitment. The Proposed Action would result in the loss of sites and isolates. Information regarding these sites and isolates has been recorded, and that information has been incorporated into BLM and State archives. However, isolates are not eligible for listing on the National Register of historic places. Data recovery activities will have occurred at all Register eligible sites prior to the onset of all project-related activities.

RESIDUAL ADVERSE EFFECTS

There would be no residual adverse effects on cultural resources due to the Proposed Action.

NATIVE AMERICAN RELIGIOUS CONCERNS/INDIAN TRUST RESPONSIBILITIES

SUMMARY

Consultation is ongoing with the Northern Paiute and Washoe Tribes, and the Reno-Sparks Indian Colony to determine direct or indirect impacts to Native American traditional or religious values. The Pyramid Lake Paiute did not identify any specific Native American Religious Concerns.

DIRECT AND INDIRECT IMPACTS

Proposed Action

Formal consultation with the Northern Paiute and Washoe Tribes, and the Reno-Sparks Indian Colony is ongoing. Specific resources or areas of concern have not been identified as a result of the consultation process. Although specific resources have not been identified, it is possible to discuss the general types of impacts that may occur to Native American Religious Concerns.

The Proposed Action would change vegetation patterns and wildlife distribution within the Project area. Such changes, individually and collectively, could impact the integrity of power spots, disrupt the flow of spiritual power, and cause the displacement of spirits. These effects may have an impact on Northern Paiute and Washoe spiritual life and cosmology, and could limit their potential to participate in traditional religious activities.

Spirits can be benevolent or malevolent, depending on how they are treated. Many rituals are directed at controlling use of power and balancing potentially dangerous spiritual powers that pervade nature. Religious behavior is focused on maintaining integrity of power spots, presence of spiritual powers, relationship with owner-spirits of plants and animals, and life-giving forces. Tribes consider modification of such power relationships to be dangerous. Altering the intricate web of power relationships that occur over a landscape affects the basic relationship between

the tribes and Mother Earth. The potential to balance malevolent powers that pervade nature becomes diminished. The very character of the spiritual realm could be modified.

Native Americans have identified several resources as relevant within the context of Native American Religious Concerns and Indian Trust Responsibilities. They include impacts to soil, air, water, vegetation, wildlife, cultural resources, and Native American religious concerns.

Based on results of scoping, public meetings, and Native American consultation, the following have been identified by Native Americans as impacts associated with the Proposed Action:

- Permanent modification of the local topography, especially in the mine areas.
- Impacts to air quality and noise levels along Eagle Canyon Drive, especially in the area of the Reno-Sparks Indian Colony.
- Changes in vegetation patterns and wildlife habitat within Hungry Valley.
- Impacts to prehistoric cultural resources, and the excavation and removal of archaeological material.
- Impacts to the distribution and flow of spiritual power within Hungry Valley, and the ability of Native Americans to participate in traditional religious activities.

Alternative A – Chickadee Drive Access Route

Impacts to Native American Religious Concerns resulting from implementation of Alternative A are anticipated to be of a similar type and magnitude as those associated with the Proposed Action.

Alternative B – South Access Route

Impacts to Native American Religious Concerns resulting from implementation of Alternative B are anticipated to be of a similar type as those associated with the Proposed Action. The magnitude of that impact would be increased when compared to the Proposed Action. Alternative B would impact a larger number of cultural resources, thereby increasing the amount of archaeological treatment required.

No Action Alternative

No impacts would occur to Native American Religious Concerns under the No Action Alternative.

MITIGATION AND MONITORING MEASURES

The Reno-Sparks Indian Colony has expressed concern that the Proposed Action and action alternatives would impact the colony, particularly the air quality. The BLM, under its trust responsibilities, is considering these concerns beyond the analysis. The Proposed Action and mitigation measures described in the Water and Air Resource sections provide sufficient protection to Reno-Sparks Indian Colony resources under BLM trust responsibilities. However, BLM is working with the Washoe County Air Quality Management Division to identify other appropriate permit conditions or mitigations beyond those identified in the Proposed Action and *Air Resources* section, such as additional sampling, controls on the operation, or air quality monitoring.

Consultation between BLM and local tribes is ongoing. No mitigation and monitoring measures beyond those described in the *Proposed Action* and *Environmental Protection Measures* sections of Chapter 2 have been identified to reduce impacts to Native American Religious Concerns.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Consultation between BLM and local tribes is ongoing. The Proposed Action would result in the irreversible and irretrievable commitment of resources central to a consideration of Native American Religious Concerns, especially when viewed from the perspective of the Native American community.

Irreversible impacts would occur to archaeological resources impacted either by the proposed Action or through excavation. From the Native American perspective, impacts to the distribution and flow of spiritual power within Hungry Valley may be permanent. This would have the potential to impact the relationship between Native Americans and Mother Earth.

RESIDUAL ADVERSE EFFECTS

When viewed from the Native American perspective, implementation of the Proposed Action or Alternatives would result in residual effects on Native American Religious Concerns.

SOCIAL AND ECONOMIC RESOURCES

SUMMARY

Positive impacts resulting from implementation of the Proposed Action would be direct employment in the mining industry and secondary employment in the retail and service sectors in the Reno/Sparks area; income generated from wages paid by Oil-Dri and by secondary job employers in the area; and property taxes and net proceeds of mining taxes paid by Oil-Dri to local and state jurisdictions. Negative impacts would be minimal because only a small number of construction and operational workers are expected to be hired outside the local labor area.

DIRECT AND INDIRECT IMPACTS

Proposed Action

Direct and indirect impacts associated with the Project would not differ between implementation of the Proposed Action. Existing population trends, demographic characteristics, ethnic composition, and personal income, housing, public utilities and services, emergency services, health care and social services, library and recreational services, public education for Washoe County are not expected to change as a result of implementation of the Proposed Action.

Economy and Employment

The addition of 50 to 100 mining related jobs, and associated service sector positions, in Washoe County would not result in a measurable change to the existing population (ingress) of the Reno-Sparks area. The demographic characteristics or ethnic composition are not likely to change in Washoe County. The higher weekly wage and thus yearly income generated by these jobs would not be measurable at county level. Local wage related impacts (increased weekly income) may occur, as it is expected that a relatively large number of Project related jobs would be filled by local residents.

Economic Impact of Payroll

It is assumed by this analysis that 80 percent of gross payroll is available for direct spending. Total impact is therefore the sum of adjusted payroll, indirect impact, and induced impact.

Table 4-6 displays the expected Economic Impact of Payroll at the mine over a five year period beginning in 2000 as determined by the Economic Development Authority of Western Nevada (EDAWN 2000).

Economic impact of construction cost of the Project is projected as a one-time source of economic impact as measured by the sum of local equipment purchase, indirect impact, and induced impact. The estimated impact of construction for the Project estimates a construction cost of $4,800,000, an indirect impact of $1,352,640, and an induced impact of $1,993,440 resulting in a total impact of construction of $8,146,080.

Due to the relatively small impact of the Project on a County level, the economic impact of local equipment purchase is also a one-time source of impact, and is the sum of local equipment purchases, indirect, and induced impact. The estimated impact of local equipment purchases from the Project is approximately $6,788,400.

Taxation

Washoe County property tax revenues will increase as a result of the valuation of the processing facility and mine related property as well as the projected tax on Net Proceeds of Minerals from the Project. Property taxes from mine related property is expected to be approximately $100,000 per year (in 2000 dollars). Tax revenues from Net Proceeds of Minerals from the Project for the first ten years of mine life are expected to be approximately $200,000 per year (in 2000 dollars).

Alternative A – Chickadee Drive Access Route

Impacts to social and economic resources resulting from implementation of Alternative A would be the same as those described for the Proposed Action.

Alternative B – South Access Route

Impacts to social and economic resources resulting from implementation of Alternative B would be the same as those described for the Proposed Action

No Action Alternative

Negative socioeconomic impacts resulting from implementation of the No Action Alternative would be a reduction in employment opportunities for local and Reno-Sparks Indian Colony residents, decreased revenues to local and state jurisdictions, and reduced wages spent in the local economy. Less stress on community services would be a positive impact under the No Action Alternative.

MITIGATION AND MONITORING MEASURES

No mitigation and monitoring measures beyond those described in the *Proposed Action* and *Environmental Protection Measures* sections of Chapter 2 have been identified to reduce impacts to Social and Economic Resources.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

There would be no irreversible and irretrievable commitment of socioeconomic resources associated with the Reno Clay Plant Project.

RESIDUAL ADVERSE EFFECTS

Residual adverse impacts would be as described under direct and indirect impacts.

TABLE 4-6
Economic Impact of Payroll
Reno Clay Plant Project

Year	Gross Payroll	Adjusted Payroll	Indirect Impact	Induced Impact	Total Impact
1	$1,100,000	$880,000	$247,984	$365,464	$1,493,448
2	$1,900,000	$1,520,000	$428,336	$631,256	$2,579,592
3	$2,800,000	$2,40,000	$631,232	$930,272	$3,801,504
4	$3,200,000	$2,560,000	$721,408	$1,063,168	$4,344,576
5	$3,600,000	$2,880,000	$811,584	$1,196,064	$4,887,648
TOTAL	**$12,600,000**	**$10,080,000**	**$2,840,544**	**$4,186,224**	**$17,106,768**

Source: EDAWN 2000.

ENVIRONMENTAL JUSTICE

SUMMARY

Based on results of scoping and public meetings, Native Americans have identified impacts to soil, air, water, vegetation, wildlife, cultural resources, and Native American Religious Concerns as relevant within the context of environmental justice. Analysis of these resources presented in this document indicate the impacts would not be "adverse" since they do not have a significant effect on human health or the environment, nor do they exceed established thresholds. The distribution and flow of spiritual power within Hungry Valley, and the ability of Native Americans to participate in traditional religious activities may be impacted.

DIRECT AND INDIRECT IMPACTS

Proposed Action

Groups are present within the general study area that meet EPA guidelines (1998) as a minority or low-income population. They include the following:

- Based on year 2000 census data, Native Americans in Census Tract 35.01 and 35.02 meet the criteria of a minority population. Based on year 1990 census data, Native Americans in Census Tract 34.98 (the 1990 equivalent of Tracts 35.01 and 35.02) and a low-income population.

- As of 1990, small Black populations living in census tracts 27.01 and 34.98 meet the criterion of a low-income population.

Environmental justice impacts that would occur are discussed by census tract.

Census Tract 27.01

The 1990 census identified a disproportionately large percentage of Black persons in Census Tract 27.01 as meeting the "low-income" criteria. Examination of the census data indicates that persons in this population reside in the Sun Valley area.

Impacts associated with the Proposed Action are identified in other sections of this chapter. None of those impacts have been identified as affecting the Sun Valley portion of Census Tract 27.01. As a result, the identified Black population would not experience a disproportionate impact that would affect its health or environment. Based on results of scoping and public meetings, representatives of the Black population in Census Tract 27.01 have not expressed a concern that impacts, although not significant, are unacceptable, or above generally accepted norms. As a result, environmental justice impacts would not occur within Census Tract 27.01 due to the Proposed Action.

Census Tract 34.98

The 1990 census identified a proportionately large percentage of Native Americans as present in Census Tract 34.98. The census also identified a proportionately large number of Native American and Black persons in the census tract as meeting the "low-income" criteria.

Examination of the census data indicates that low-income Blacks reside in the Pyramid Lake area. None of the impacts associated with the Proposed Action have been identified as affecting the Pyramid Lake portion of Census Tract 34.98. As a result, the identified Black population would not experience a disproportionate impact affecting its health or environment. Based on results of scoping and public meetings, representatives of the Black population in Census Tract 34.98 have not expressed a concern that impacts that, although not significant, are unacceptable, or above generally accepted norms. As a result, environmental justice impacts would not occur to the low-income Black population within Census Tract 34.98 due to the Proposed Action.

Native Americans at the Reno-Sparks Indian Colony represent a minority and a low-income population when viewed within the context of environmental justice. Analyses presented in this document indicate that those impacts would not be "adverse" from a technical perspective since they do not have a significant effect on human health or the environment, nor do they exceed established thresholds. Implementation of the Proposed Action or any of the action alternatives would result in impacts, that would be shouldered disproportionately by Native Americans.

Alternative A – Chickadee Drive Access Route

When compared with the Proposed Action, environmental justice impacts that would result from implementation of Alternative A in Census Tract 34.98 would be somewhat reduced. Eagle Canyon Drive would not be used as a truck access route by Oil-Dri, thereby reducing noise and air quality impacts to residents of the Reno-Sparks Indian Colony. Other environmental justice impacts in Census Tract 34.98 that would result from implementation of Alternative A would be the same as described for the Proposed Action.

Use of Chickadee Drive by Oil-Dri would result in an increased level of noise and air quality impact within Census Tract 27.01. Representatives of the low-income Black population are not located in portions of the census tract that would experience that increased impact. Further, members of that population have not expressed a concern that those impacts, although not significant, are unacceptable, or above generally accepted norms. As a result, environmental justice impacts would not occur within Census Tract 27.01 due to the Alternative A.

Alternative B – South Access Route

Environmental justice impacts that would result from implementation of Alternative B would be the same as those described for Alternative A.

No Action Alternative

No environmental justice impacts would occur under the No Action Alternative.

MITIGATION AND MONITORING MEASURES

Mitigation measures for potential environmental justice impacts would be the same as those identified for other impacts to soil, air, water, vegetation, wildlife, cultural resources, and Native American Religious Concerns (see appropriate sections of Chapter 4).

The environmental justice impact analysis was prepared based on a combination of year 1990 and year 2000 census data. If additional 2000 census data become available prior to issuance of the Final EIS, the analysis will be reassessed based on those data. Any such examination of new data will be included in the Final EIS.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Most environmental justice impacts would persist through the life of the Proposed Action. After cessation of mining and completion of reclamation activities, soil, air, water, vegetation, and wildlife resources would be expected to return to pre-mining conditions.

RESIDUAL ADVERSE EFFECTS

Implementation of the Proposed Action or alternatives would not result in residual adverse environmental justice effects.

CUMULATIVE EFFECTS

INTRODUCTION

This section summarizes potential cumulative environmental impacts on resources in the Hungry Valley that could result from the Proposed Action. As stated in 40 CFR 1508.7, " . . . 'cumulative impact' is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency [Federal or non-Federal] or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively *significant* actions taking place over a period of time . . .."

Cumulative effects address direct and indirect impacts of those resource areas described earlier in this chapter. Cumulative effects analyses do not consider mitigation that may be required by BLM or other agencies for individual actions.

The geographic cumulative effects area referred to in this section varies depending on the resource being discussed. **Figure 2-1** depicts the general area for most resources for which cumulative effects have been evaluated. The Hungry Valley is the central feature of the cumulative effects area. For most physical resources, the cumulative effects area is generally bounded on the east by the Reno/Sparks Indian Colony; suburban development to the south and west; and undeveloped public land to the north.

PAST AND PRESENT ACTIVITIES

Livestock grazing and a wide variety of dispersed recreation activities have been and continue to be the dominant land use activities on public land in the cumulative effects area. Private land in the cumulative effects area has been used for grazing or suburban development.

Mining activities in the cumulative effects area include exploration drilling, trenching, sampling, and gravel pits.

REASONABLY FORESEEABLE ACTIVITIES

Past, present, and reasonably foreseeable activities within the cumulative effects area include mine development within the claim block held by Oil-Dri, mineral exploration, gravel pits, mined-land reclamation, livestock grazing, wildlife habitat restoration, suburban development, and recreational activities including target shooting, hiking, horseback riding, off-highway vehicle (OHV) use, and model airplane flying.

Mining and processing of clay deposits in Oil-Dri's claim block could be expected to continue at levels comparable to the Proposed Action. If mining does occur in the remainder of Oil-Dri's claim block it would extend beyond the 20-year life projected for the Proposed Action, and subsequent documentation under NEPA would occur.

Specific projects that are proposed for the Hungry Valley area include:

- Sierra-Pacific five to 10 year plan to construct the 120 kV Sugarloaf Electric Line from the Tracy power plant across Hungry Valley to Spanish Springs.
- Reno-Sparks Indian Colony – plans to develop several wells on the westside of Hungry Valley and construct an 8 to 10-inch diameter water pipeline to transport water from the wells to the Indian Colony.
- Expansion of the Sha-Neva gravel pit operation onto public land.

These land uses are expected to continue into the future at varying levels of activity.

Reclamation Activities

Reclamation of mined land in Hungry Valley would result in the development of shallow depressions 10 to 40 feet in depth. Reclamation would reduce impacts created by mining by restoring the land surface to productive uses including wildlife, grazing, and recreation. Visual impacts would also be reduced by reclamation of mined areas. Vegetation that resembles natural,

undisturbed areas would become established and would allow the disturbance areas to blend with adjacent areas. Access and haul roads associated with future mine development would continue to disrupt the natural visual elements.

GEOLOGY, MINERALS AND PALEONTOLOGY

The cumulative effects area for geology and mineral resources incorporates existing and reasonably foreseeable mining activity through year 2020. The analysis area includes Hungry Valley in the vicinity of the Reno Clay Plant Project.

Continued mining in the vicinity of Hungry Valley would result in relocation of soil, overburden, and rock materials from their natural locations to man-made stockpiles and/or placed as backfill in mined-out areas. Other than removal of clay material and aggregate from the natural geologic setting, cumulative impacts to geologic resources are expected to be minimal; especially after completion of reclamation activities required by existing regulations.

The cumulative effects area for paleontological resources includes areas potentially disturbed by mining activities through year 2020. Diatoms and ostracods are the only fossils documented as occurring in the geologic units within the cumulative effects area, and neither are considered sensitive fossils. Other mining-related excavations (e.g., haul and access roads and material stockpiles) are shallow and would primarily affect unconsolidated soil surfaces. While the cumulative impact of mining in Hungry Valley may result in loss or destruction of some fossils, this region of Nevada is not known for significant paleontological resources.

AIR RESOURCES

Fugitive dust and gaseous emissions from mining operations would affect air quality in the Project area. The Project would create continued and extended haul truck traffic on the Main Haul Road as well as Eagle Canyon Drive, Chickadee Drive, or the South Access Route. Ambient air quality data for the region currently reflect the impacts of gaseous emissions in the airshed. Air quality in the region is in compliance with applicable standards and would be expected to remain in compliance following the addition of the Project operations.

Modeling has been provided in the Air Quality Assessment report to demonstrate that proposed emissions from the Oil-Dri project would not be expected to cause or contribute to a violation of the NAAQS or Nevada ambient air quality standards. Other existing industrial sources in the Reno area are more than five-miles from the Oil-Dri site. Modeled impacts from the Oil-Dri mine and processing facility are well below the standards and are further reduced as distance from the site increases. Therefore, combined impacts of the Oil-Dri facility and other facilities would not be expected to threaten any ambient air quality standard.

Cumulative impacts could also include future growth in the Project area. Future mining, and mineral processing or other activity that could impact air quality, would require the acquisition of air quality permits; as such, permitted emissions for foreseeable future mining activities would remain within specified levels.

AESTHETICS

VISUAL RESOURCES

Impacts on visual resources can be minimized, but not eliminated, through reclamation. Angular features can be rounded and sideslopes flattened through grading to reflect existing forms, lines, and textures. Mine areas would remain as depressions with depths ranging from 10 to 40 feet. Revegetation of all disturbed areas would reduce long-term visual impacts.

NOISE

Noise generated by mining and processing activities in the Hungry Valley would be in addition to existing impacts from such activities as hunting, motocross, model airplane events, vehicle traffic, and airline approach traffic to the Reno-Tahoe International Airport. With the exception of airline approach traffic, noise from non-mining related sources would be sporadic and of short-term duration and not cumulative.

WATER RESOURCES

The cumulative effects area for water resources includes Hungry Valley and the northern portion of Lemmon Valley. The only direct effect identified for water quantity is the withdrawal of groundwater from the Processing Facility supply well(s) for the life of the mine (20 years). Groundwater drawdown from this withdrawal is expected to cause groundwater level reductions in the vicinity of the Processing Facility. This groundwater drawdown could have an additive effect to regional drawdown that is occurring near some residential areas in Lemmon Valley.

SOIL

Impacts to soil from mining, exploration, livestock grazing, OHV use, and other construction and restoration activities would continue to occur at various levels throughout Hungry Valley. Associated impacts from these activities would include loss of soil productivity due to changes in soil structure from mixing and handling, decreased vegetative cover, water and wind driven soil losses, and compaction from roads, construction, and livestock grazing.

Reclamation associated with mining disturbance and future restoration activities would ameliorate soil loss and productivity loss. Soil salvaged and used in reclamation would become viable once vegetation is established.

VEGETATION RESOURCES

The cumulative effects area for vegetation resources includes areas disturbed by mining and exploration in Hungry Valley. Cumulative impacts are directly related to those discussed in the *Soil* section above. Mine development, road and facility construction, OHV use, and livestock grazing would impact vegetation at those sites. Reclamation of disturbed areas after mining ceases would reestablish productive vegetative cover. Propagation of noxious weeds could occur after construction and restoration activities are completed. Implementation of agency-required noxious weed control plans would reduce spread and propagation of weeds.

RANGE RESOURCES

The cumulative effects area for range resources is the Paiute Allotment and includes Shovel Springs and Hungry Valley pastures. Activities that result in land disturbance on public land would be subject to restoration requirements of the BLM. As activities that reduce the number of AUMs that can be accommodated in any specific allotment for a period of time, land restoration would also restore the allotment carrying capacity.

WILDLIFE RESOURCES

Cumulative impacts to wildlife from activities in the area include those related to roads, haul truck traffic, habitat loss from open pit mining, construction of ancillary facilities, and OHV and other recreational uses. Land reclamation and restoration activities required by BLM would result in establishment of vegetative cover that would support wildlife in the cumulative effects area.

SPECIAL STATUS SPECIES

Cumulative impacts to special status species would be the same as those described for *Wildlife Resources*. Continued mining, exploration, OHV use, construction, and livestock grazing would likely decrease potential habitat available for the pygmy rabbit and burrowing owl. In addition, other diverse recreational activities, such as "coyote chases" and hunting dog field trials would likely discourage either of these special species from establishing residency in the area. Restoration of habitat as a result of BLM requirements would reduce the duration of impacts to special status species.

LAND USE AND ACCESS

The cumulative effects area evaluated for land use and access encompasses roads and public land access in Hungry Valley extending from the Spanish Springs area to the Lemmon Valley area. Reasonably foreseeable activity in the cumulative effects area is not anticipated to eliminate public access to surrounding areas. Activities being conducted in the future may require relocation or modification to public access; however, access would still be

maintained in accordance with BLM requirements. Restoration of land surface disturbed by mining would eventually result in use and access commensurate with pre-mining levels.

RECREATION

The cumulative effects area for recreation includes the area discussed in Chapter 3, Recreation Resources. Presently, much of this area is open space available for both organized and dispersed recreation activities. However, Oil-Dri holds mining claims on 5,827 acres of public land in Hungry Valley and would potentially continue developing some of those claims. The amount of land developed during active mining would vary; however, and would likely be small relative to the amount of available open space in the valley. Over time, as existing claims are developed and reclaimed, cumulative impacts to recreation could include additional pits occupying portions of the valley. The remaining land in the valley would be returned to pre-mining uses.

CULTURAL RESOURCES

Cumulative impacts to cultural resources may occur due to increased human presence and development of anticipated or reasonably foreseeable actions. Impacts due to increased human presence would occur primarily due to urban development in surrounding areas. Proposed and reasonably foreseeable actions are not likely to influence this type of impact. The magnitude of the past, proposed, and reasonably foreseeable actions is not pronounced when viewed in the context of the resource base known or suspected to be present in Hungry Valley and the surrounding area. Properties subject to loss are not likely to be unique, nor the sole surviving representative of a type or period. To date, the significance of prehistoric properties subject to loss has been related to their information potential. That potential can be realized through the preparation and implementation of project related, approved treatment plans.

NATIVE AMERICAN RELIGIOUS CONCERNS

Impacts due to the proposed and/or future actions could cause an incremental, cumulative impact to resources and forces central to the basic religious values of the Northern Paiute and Washoe tribes. Consultation between BLM and tribes is ongoing. Consultation has identified concerns, that the Proposed Action would contribute to a cumulative impact to resources central to a consideration of Native American Religious Concerns.

SOCIAL AND ECONOMIC RESOURCES

Although some exploration activities would continue to occur in this portion of Washoe County, no reasonably foreseeable mining development, other than expansion of existing gravel pits, is anticipated at this time. The local labor pool is expected to meet future employment needs of these developments.

ENVIRONMENTAL JUSTICE

The cumulative effects area for environmental justice included census tracts 27.01 and 34.98. Cumulative impacts are directly related to impacts that would occur to soil, air, water, vegetation, wildlife, and cultural resources, and Native American Religious Concerns. Reclamation of mining disturbance would ameliorate soil, air, vegetation, and wildlife resources, therefore, the additive effects of these impacts on these resources would be short-term.

CHAPTER 5

CONSULTATION, COORDINATION, AND PREPARATION

PUBLIC PARTICIPATION SUMMARY

Public participation specific to the Reno Clay Plant Project (Project) is summarized in this chapter. The summary indicates how the public has been involved, identifies persons and organizations to be contacted for feedback, and specifies time frames for accomplishing goals in accordance with 40 CFR 1506.6.

Public involvement in the EIS process includes the necessary steps to identify and address public concerns and needs. The public involvement process assists the agencies in: (1) broadening the information base for decision making; (2) informing the public about the Proposed Action and the potential long-term impacts that could result from the project; and (3) ensuring that public needs are understood by the agencies.

Public participation in the EIS process are required by NEPA at four specific points: the scoping period, review of Draft EIS, review of Final EIS, and receipt of the Records of Decision.

- **Scoping:** The public is provided a 30-day scoping period to disclose potential issues and concerns associated with the Proposed Action. Information obtained by the agencies during public scoping is combined with issues identified by the agencies and this forms the scope of the EIS.
- **Draft EIS Review:** A 60-day Draft EIS review period is initiated by publication of the Notice of Availability for the Draft EIS in the Federal Register. A public hearing will be held in Reno, Nevada during the 60-day comment period.
- **Final EIS Review:** A 30-day Final EIS review period is initiated by publication of the Notice of Availability for the Final EIS in the Federal Register.
- **Record of Decision:** Subsequent to the 30-day review period for the Final EIS, a Record of Decision would be prepared.

IMPLEMENTATION

The public participation process for the Project EIS is comprised of the following five components:

1. Public Scoping Period and Meetings

Publication of a Notice of Intent (NOI) initiated a public scoping period on July 22, 2000. The NOI summarized the Proposed Action and a determination by the agency that an EIS would be necessary for analysis of Oil-Dri's proposal. The news media and public were notified of the public comment period.

Scoping letters were mailed to 111 individuals and organizations announcing the scoping period and describing the Proposed Action. Issues that had been identified by the agency were also included in the mailing.

A public scoping meeting was held in Reno, Nevada on August 8, 2000. Scoping information was made available to the twenty individuals attending the meeting. In addition, presentations were made to three Washoe County Citizen Advisory Boards and the Reno/Sparks Indian Colony.

The public scoping period ended on August 21, 2000. During that period the BLM received 398 written responses from individuals and organizations.

2. Distribution of the Draft EIS

The Draft EIS was distributed as follows:

- A Notice of Availability was published in the Federal Register specifying dates for the comment period and the date, time, and location of a public meeting.
- A news release was provided by the BLM at the beginning of the 60-day comment period on the Draft EIS.
- The Draft EIS was distributed to interested parties identified in the updated EIS mailing list.
- The Draft EIS was posted on the BLM Carson City Field Office website.
- A public open-house meeting is scheduled to be held in Reno, Nevada to obtain comments on the Draft EIS and to answer questions that the public has regarding the project or the EIS process.

3. Final EIS Distribution

The Final EIS distribution will be completed after consideration is given to comments received on the Draft EIS. The Final EIS will be released as follows:

- Notice of Availability will be published in the Federal Register.
- Copies of the Final EIS will be sent to addresses on the mailing list.
- The Final EIS will be posted on the BLM Carson City Field Office website.
- A news release will be issued to the same news outlets used for previous project announcements.

4. Record of Decision

A Record of Decision will be distributed by BLM to people and organizations identified on the updated project mailing list. A news release will be provided to the news media.

CRITERIA AND METHODS BY WHICH PUBLIC INPUT IS EVALUATED

Letters and oral comments received by BLM on the Draft EIS will be reviewed and evaluated by the agency to determine if information provided in the comments would require a formal response or contains new data that may identify deficiencies in the EIS. Steps would then be initiated to correct such deficiencies and to incorporate information into the Final EIS.

Should changes from the Draft EIS to the Final EIS be deemed significant, the agencies will review and evaluate the need to reissue a Draft EIS, prepare a supplemental EIS, or prepare a Final EIS.

Consultation With Others

In addition to the cooperating agencies identified in Chapter 1, the following state and federal agencies were consulted during preparation of the EIS:

- Nevada Department of Conservation and Natural Resources
- Nevada Department of Human Resources
- US Environmental Protection Agency
- US Fish and Wildlife Service

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CHAPTER 6 – REFERENCES AND GLOSSARIES

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LIST OF ACRONYMS

AAQS	Ambient Air Quality Standards
AFDC	Aid to Families with Dependent Children
AGP	Acid-Generating Potential
AIRFA	American Indian Religions Freedom Act
AIRS	Aerometric Information Retrieval System
ALS	Advanced Life Support
AMSL	Above Mean Sea Level
ANFO	Ammonium Nitrate and Fuel Oil
ANP	Acid-Neutralizing Potential
APE	Area of Potential Effect
ARD	Acid Rock Drainage
AWHC	Available Water Holding Capacity
AUM	Animal Unit Month
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CCEMS	Caribou County Emergency Medical Services
CEC	Cation Exchange Capacity
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CT	Computerized Tomography
CWA	Clean Water Act
DEQ	Idaho Department of Environmental Quality
DO	Dissolved Oxygen
EA	Environmental Assessment
EC	Electrical Conductivity
EIS	Environmental Impact Statement
EMT	Emergency Medical Technician
FCI	Functional Capacity Indices
FHWA	Federal Highway Administration
FLPMA	Federal Land Management Practices Act
FY	Fiscal Year
HDPE	High-Density Polyethylene
HGM	Hydrogeomorphic Methodology
HUC	Hydrologic Unit Code

KOP	Key Observation Point
LDS	Church of Jesus Christ of Latter Day Saints
LIEAP	Low Income Energy Assistance Program
MCE	Maximum Credible Earthquake
MCL	Maximum Contaminant Limit
MLA	Mineral Leasing Act
MRI	Magnetic Resonance Imaging
MSHA	Mine Safety and Health Administration
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NNP	Net Neutralization Potential
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NO_x	Nitrogen Oxide Compounds
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
NWS	National Weather Service
NTU	Nephelometric Turbidity Units
ORV	Off-Road Vehicle
OSHA	Occupational Safety and Health Administration
PLS	Pure Live Seed
PM_{10}	Particulate Matter Smaller than 10 Microns
POO	Plan of Operations
PMP	Probable Maximum Precipitation
PSD	Prevention of Significant Deterioration Air Quality Program
PTC	Permit to Construct
RCRA	Resource Conservation and Recovery Act
RMP	Resource Management Plan
ROD	Record of Decision
SAR	Sodium Adsorption Ratio
SARA	Superfund Amendments and Reauthorization Act
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SPLP	Synthetic Precipitation Leachability Procedure

TAFI	Temporary Assistance for Families in Idaho
TCP	Traditional Cultural Properties
TDS	Total Dissolved Solids
TMDL	Time Total Maximum Daily Loads
TPF	Total Particulate Factor
TSP	Total Suspended Particulate
TSS	Total Suspended Solids
USCOE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VI	Value Indices
VMT	Vehicle Mile Traveled
VOC	Volatile Organic Compound
VRM	Visual Resource Management
WAA	Wetland Assessment Area
WEG	Wind Erodibility Group

UNITS OF MEASURE

Bcy	bank cubic yards
C	celsius
cfs	cubic feet per second
cy	cubic yards (same as loose cubic yards)
dB	decibel
dBA	A-weighted decibel sound scale
F	fahrenheit
ft	feet
g	gravity
gal	gallon
gpm	gallons per minute
in	inch
kV	kilovolt
lb	pound
lcy	loose cubic yards
µg/m^3	micrograms per cubic meter
µmhos/cm	micromhos per centimeter
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mgpd	million gallons per day
MM	million
mph	miles per hour
ppm	parts per million
%	percent
tpy	tons per year

GLOSSARY

Acre-feet. The volume required to cover 1 acre to a depth of 1 foot, which is equivalent to 43,560 cubic feet.

Acid Rock Drainage (ARD). Water with pH less than 5, elevated TDS, SO_4, and trace metal concentrations that result from the oxidation of acid generating sulfide minerals with subsequent dissolution and transport of the oxidation products.

Acid Generation Potential (AGP). The concentration of acid generating minerals in a rock or soil material, measured in tons of $CaCO_3$ equivalents per kiloton of rock.

Acid Neutralization Potential (ANP). The concentration of acid neutralizing minerals in a rock or soil material, measured in tons of $CaCO_3$ equivalents per kiloton of rock.

Alluvial. Pertaining to material or processes associated with transportation or deposition of soil and rock by flowing water (e.g., streams and rivers).

Alluvium. Soil and rock deposited by flowing water (e.g., streams and rivers); consists of unconsolidated deposits of sediment, such as silt, sand, and gravel.

Alteration. A geochemical process involving mineralogic and geochemical changes due to reaction with fluids moving through rock or soil under natural conditions, particularly in association with mineral deposits. Transformation of feldspar minerals to clay through chemical weathering is considered alteration.

Ambient. Surrounding, existing, background conditions.

Anticline. A fold in rock, where the interior of the fold is comprised of rocks that are older in age than the rocks on the exterior of the fold.

Assay. Qualitative or quantitative analysis of a substance (e.g., ore body).

Basic Elements (visual). The four major elements (form, line, color, and texture) which determine how the character of a landscape is perceived.

Capillary Break. A layer of specified material (usually cobble-sized) used to prevent capillary movements of fluids from one material to another.

Cation Exchange Capacity. The number of sites on a solid surface where reversible cation adsorption and desorption can occur.

Contrast (visual). The effect of a striking difference in form, line, color, or texture of the landscape features within the area being viewed.

Critical (Crucial) Habitat. Habitat that is present in minimum amounts and is a determining factor for population maintenance and growth.

dBA. The sound pressure levels in decibels measured with a frequency weighing network corresponding to the A-scale on a standard sound level meter. The A-scale tends to suppress lower frequencies (e.g., below 1,000 Hz).

Decant. To remove or pour off a liquid without disturbing associated sediment or solids.

Decibel (dB). One-tenth of a Bel is a measure on a logarithmic scale which indicates the ratio between two sound powers. A ratio of 2 in power corresponds to a difference of 3 decibels between two sounds. The decibel is the basic unit of sound measure.

Dissolution. The process of dissolving

Electrical Conductivity (or Specific Conductance). The ability of a water or a soil-water paste to transmit electrical current, used to estimate ion concentration.

Endangered Species. Species in danger of extinction throughout all or a significant portion of its range.

Eolian. Soil and silt deposited by wind, such as loess.

Ephemeral Stream. A stream or portion of a stream which flows briefly in direct response to precipitation in the immediate vicinity, and whose channel is at all times above the water table.

EPA Synthetic Precipitation Leachability Procedure (SPLP) – Method 1312. A weak acid bottle roll extraction conducted to simulate metal release from mined material due to exposure to ambient conditions.

Evapotranspiration (ET). The portion of precipitation returned to the air through evaporation and transpiration.

Floodplain. The low and relatively flat areas adjacent to rivers and streams. A 100-year floodplain is that area subject to a 1 percent or greater chance of flooding in any given year.

Flux. Volume of groundwater per unit time that travels through a solid permeable medium, such as alluvium and bedrock.

Forage. Vegetation used for food by wildlife, particularly big game wildlife and domestic livestock.

Forbs. Any herbaceous plant other than a grass.

Fry. The young of fish.

Game Species. Animals commonly hunted for food or sport.

Hertz (Hz). The unit of frequency (i.e., sound) formerly designated as cps - cycles per second.

Host Rock. A rock body or wall rock enclosing mineralization.

Hydraulic Conductivity (K). A coefficient of proportionality describing the rate at which water can move through a permeable medium.

Hydraulic Gradient. For groundwater, the rate of change of total head per unit of distance of flow at a given point and in a given direction.

Hydrograph. A graph that shows some property of groundwater or surface water as a function of time.

Hydrophytic Vegetation. The total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present.

Hydrostratigraphic Unit. A formation, part of a formation, or group of formations in which there are similar hydrologic characteristics allowing for grouping into aquifers or confining layers.

Intermittent Stream. Stream that flows only part of the time or during part of the year; some segments of the stream may flow year-round.

Isopleth. A line, on a map or chart, drawn through points of equal size or abundance.

Key Observation Point (KOP). An observer position on a travel route used to determine visible area.

Lithic Scatter. A discrete grouping of flakes of stone created as a byproduct in the tool-making process. Often includes flakes used as tools as well as formal stone tools such as projectile points, knives, or scrapers.

Maximum Credible Earthquake. The largest conceivable earthquake that could occur in an area.

Mesic. Moist habitats associated with springs, seeps, and riparian areas.

Mitigation. Actions to avoid, minimize, reduce, eliminate, replace, or rectify the impact of a management practice.

Overburden. Sub-economic non-ore rock or soil associated with a mineral deposit.

Oxidation. A geochemical process involving chemical and mineralogic changes to rock or soil under chemical weathering conditions. Oxidation is typically associated with exposure of buried materials to atmospheric oxygen and water. The process occurs naturally, but is accelerated by mining activity.

Peak Flow. The greatest flow attained during melting of winter snowpack or during a large precipitation event.

Perennial Stream. A stream that flows throughout the year and from source to mouth.

Permeability. The capacity of porous rock, sediment, or soil to transmit a fluid.

pH. The negative $\log_{10}$ of the hydrogen ion activity in solution; measure of acidity or alkalinity of a solution.

PM-25/PM_{10}. Particulate matter less than 2.5/10 microns in aerodynamic diameter.

Probable Maximum Precipitation (PMP). The greatest depth of precipitation for a given duration that is physically possible over a given storm area at a particular location at a certain time of year.

Raptor. A bird of prey (e.g., eagles, hawks, falcons, and owls).

Richter Magnitude. Logarithmic scale of earthquake intensity.

Riparian. Situated on or pertaining to the bank of a river, stream, or other body of water. Riparian is normally used to refer to plants of all types that grow along streams, rivers, or at spring and seep sites.

Run-of-Mine Overburden. Sub-economic rock mined from the phosphate deposit, which is and placed in surface dumps or as pit backfill

Salinity. Measure of solute concentration, in grams per kilogram; "saltiness".

Scoping. Procedures by which agencies determine the extent of analysis necessary for a proposed action, (i.e., the range of actions, alternatives, and impacts to be addressed; identification of significant issues related to a proposed action; and the depth of environmental analysis, data, and task assignments needed).

Sediment Load. The amount of sediment (sand, silt, and fine particles) carried by a stream or river.

Seepage Collection System. A system of drains, ponds, and pumps to collect and return tailing impoundment and embankment seepage.

Significant. As used in NEPA, requires consideration of both context and intensity. Context means that the significance of an action must be analyzed in several contexts such as society as a whole, and the affected region, interests, and locality. Intensity refers to the severity of impacts (40 CFR 1508.27)

Sodium Adsorption Ratio (SAR). Ratio of dissolved sodium to calcium+magnesium in water; provides a prediction of cation exchange reaction potential.

Sulfides. That part of a lode or vein not yet oxidized by air or surface water and containing sulfide minerals.

Sulfide Oxidation. Chemical conversion of reduced sulfide compound to an oxidized sulfate compound, with associated release of iron and formation of secondary iron oxide mineralization.

Storage Coefficient (S). Volume of water that an aquifer releases from storage per unit surface area of aquifer per unit decline in the component of hydraulic head normal to the surface: S is dimensionless.

Syncline. A folded rock sequence where the interior of the fold is younger than the rock on the exterior.

Threatened Species. Any species of plant or animal which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Total Suspended Particulate (TSP). Particulates less than 100 microns in diameter (Stokes equivalent diameter).

Total Dissolved Solids (TDS). Total amount of dissolved material, organic or inorganic, contained in a sample of water.

Total Suspended Solids (TSS). Undissolved particles suspended in liquid.

Transmissivity (T). The rate at which water will flow through a vertical strip of aquifer one foot wide and extending through the full saturated thickness, under a hydraulic gradient of 1.0.

Ungulate. A hoofed mammal.

Visual Quality Objective (VQO). A desired level of excellence based on physical and sociological characteristics of an area. Refers to degree of acceptable alteration of the characteristic landscape.

Watershed. Drainage basin for which surface water flows to a single point.

Wetlands. Areas inundated by surface water or groundwater with a frequency sufficient to support vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.

Wetland Functions. Dynamic biological, chemical, and physical processes that characterize wetland ecosystems.

Wetland Values. Based on societal properties by which wetlands are determined to be useful, or impart public good.

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